AVIATION WEEK

DEC. 1, 1947

INCORPORATING AVIATION AND AVIATION NEWS

A McGRAW-HILL PUBLICATION

PUBLIC LIBRARY
DEC 3 - 1947
DETROIT

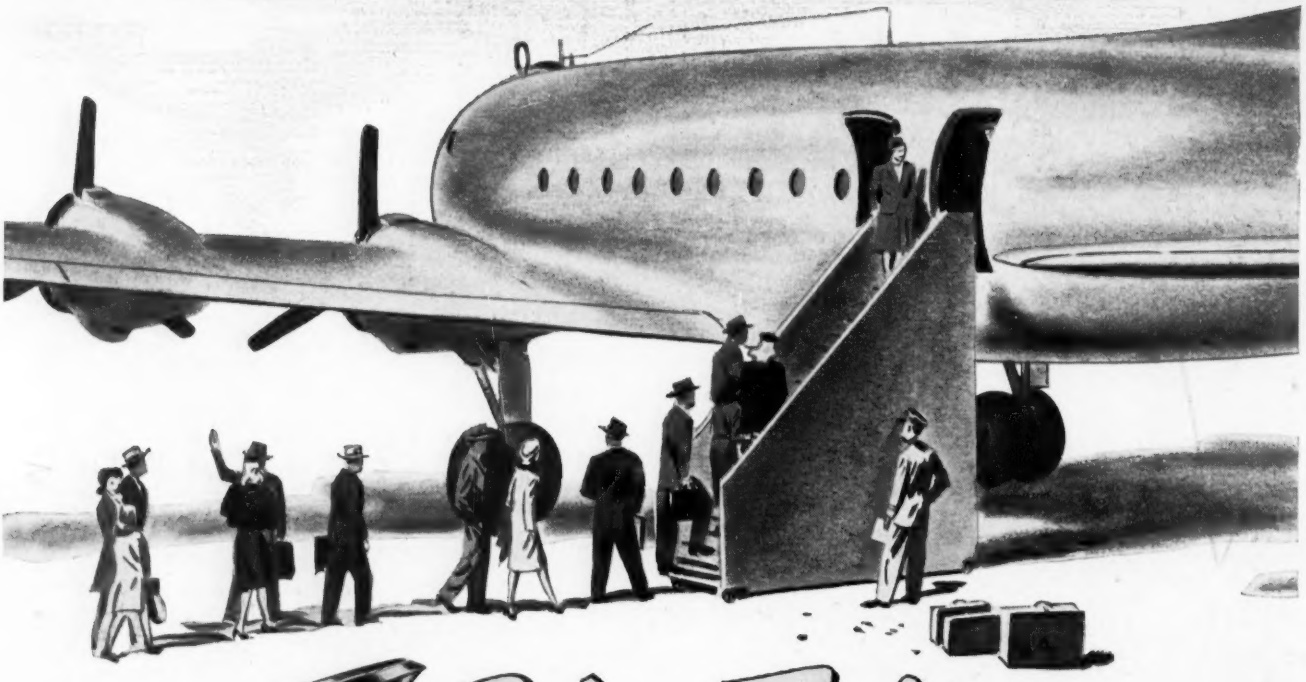
Sentinels of Peace

"A just and lasting peace among ourselves and with all nations" . . . that was the goal which Abraham Lincoln set for his countrymen eighty-two years ago. It is the goal toward which we are striving today—more earnestly than ever before. Though the ideal may seem far short of attainment, lasting peace throughout the world represents the hope and aspiration of men of good will everywhere. Winging through the skies on friendly missions, America's planes are reminders of the might which must ever be the bulwark of permanent peace. Our air fleet has helped to make this country strong; if we are to continue invincible, we must maintain it. Only a powerful America can remain a peaceful America.

Serving World Aviation BG *For Thirty Years*

THE BG CORPORATION • NEW YORK 19, NEW YORK

DETROIT PUB LIBRARY
TECHNOLOGY DPT
96 PUTNAM AV
DETROIT MICH



Safer Flying WITH

Thompson Sodium-Cooled Valves

AIR TRANSPORTS could not develop their present power nor safely cover their vast distances without sodium-cooled valves. Since Thompson first manufactured the sodium-cooled valve, constant research has produced new valve steels and methods, and aircraft valve life has steadily multiplied from the few flying hours of three decades ago to the many thousands of hours recorded by Thompson Aircraft Valves in regular operation today.

A Thompson Sodium-Cooled Aircraft Valve, so simple-looking in its perfect contour and finish, represents many engineering achievements in design, chemistry, metallurgy and production.

Hundreds of extreme precision operations of forging, machining, heat-treating and inspection go into each valve before the final result is ready for its vital responsibility.

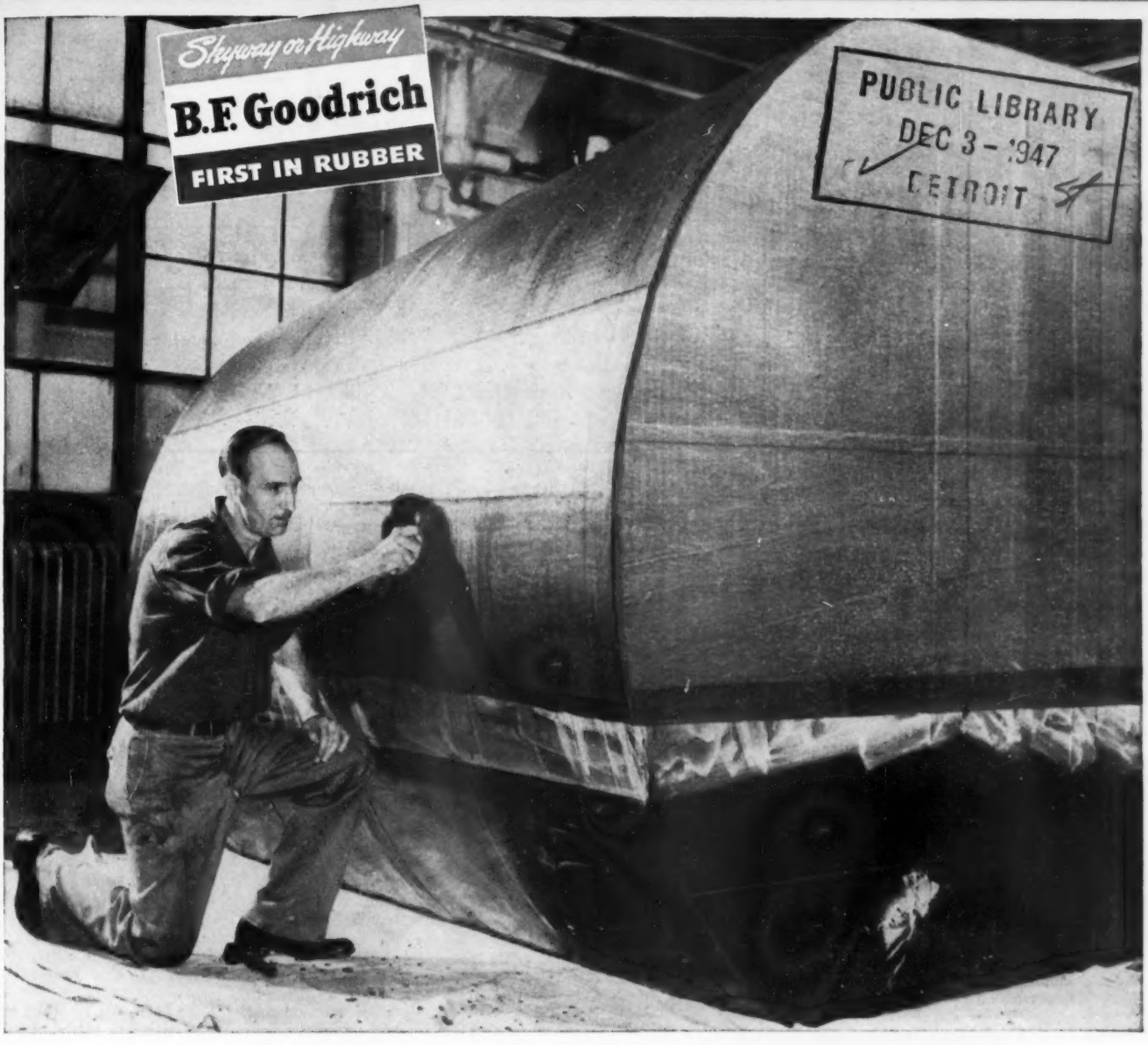
That's why safety-minded aircraft engine builders and airline operators use Thompson Sodium-Cooled Valves so universally.

Thompson Products, Inc.

CLEVELAND • DETROIT • LOS ANGELES

Precision Parts for Aircraft and Automotive Industries; Manufacturers of the Famous Thompson Sodium-Cooled Valve; Builders of Vanes, Blades and Assemblies for Jet and Turbo Propulsion Engines

PUBLIC LIBRARY
DEC 3 - 1947
DETROIT



It takes a 2375-gallon drink upstairs without spilling a drop

SUPPLYING THE COLOSSAL THIRST of a new giant airplane called for a special system of fuel cells . . . one of them the largest ever built—2375 gallons!

The trick was to build a cell that big which would be leak-proof and self-sealing, would withstand shock and the strain of sloshing fuel, and would have minimum weight.

War-proved B. F. Goodrich fuel cell material, together with special bracing designed by B. F. Goodrich engineers, turned out to be the ideal answer. The 300 square foot cell was actually lighter than the plane manufacturer called for. And in AN tests a sample cell proved highly successful in withstanding the effects of pressure, load, negative pressure, sloshing, vibration and puncture.

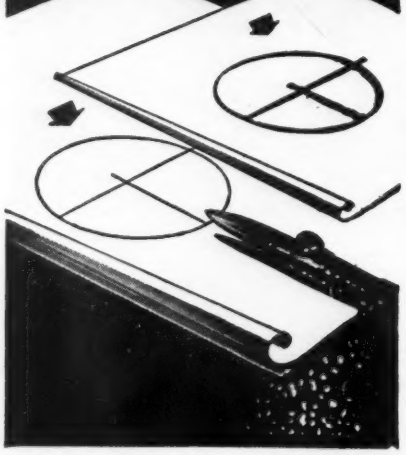
The remarkable performance of this B. F. Goodrich self-sealing fuel cell results from its sandwich construction. An inner layer of rubber keeps the aromatic fumes, vital to the potency of aviation fuel, securely imprisoned. Two layers of sealant rubber swell on contact with the gasoline, prevent leakage in case of puncture. And rayon cord plies provide toughness and abrasion resistance.

This cell carries 2375 gallons of fuel aloft, through rapid altitude changes and fast maneuvers, without losing a drop. Other self-sealing fuel cells and bladder-type cells are produced by B. F. Goodrich to fit all types of planes. These fuel cells are a good example of how B. F. Goodrich keeps pace with the needs of the aviation industry. B. F. Goodrich is constantly working to make planes ever better, cheaper and safer. *The B. F. Goodrich Company, Aeronautical Division, Akron, Ohio.*

B.F.Goodrich

FIRST IN RUBBER

Tracing cloth that defies time



● The renown of Imperial as the **finest in** Tracing Cloth goes back well over **half a** century. Draftsmen all over the world **prefer** it for the uniformity of its high **transparency** and ink-taking surface and the **superb quality** of its cloth foundation.

Imperial takes erasures readily, **without** damage. It gives sharp contrasting **prints of** even the finest lines. Drawings **made on** Imperial over fifty years ago are **still as** good as ever, neither brittle nor opaque.

If you like a duller surface, for clear, hard pencil lines, try Imperial Pencil Tracing Cloth. It is good for ink as well.

IMPERIAL TRACING CLOTH

SOLD BY LEADING STATIONERY AND DRAWING MATERIAL DEALERS EVERYWHERE

Vol. 47 No. 22

AVIATION WEEK

Dec. 1, 1947

INCORPORATING AVIATION AND AVIATION NEWS

The Aviation Week	7	New Aviation Products	33
News Digest	8	Financial	34
Headline News	11	Sales & Service	37
Industry Observer	17	Briefing for Dealers	40
Aviation Calendar	17	Transport	43
Engineering-Production	18	World News	51
Editorial	58		

Robert H. Wood
EDITOR

Merlin H. Mickel
MANAGING EDITOR

Robert B. Hotz	News Editor	Albert E. Smyser, Jr.	Engineering
Irving Stone	Technical Editor	Scholer Bangs	Pacific Coast Editor
William Kroger	Manufacturing	Katherine Johnsen	Congress
Alexander McSurely	Sales & Service	Stanley L. Colbert	Production Editor
Charles L. Adams	Transport Editor	Marie Adams	Editorial Assistant
Robert McLarren	Engineering	V. Giaculli	Editorial Makeup

Research, W. D. Lanier

Executive and Editorial Offices: 330 W. 42nd St., New York 18, N. Y.; National Press Bldg., Washington 4, D. C.

Domestic News Bureau: Atlanta 3, Rhodes-Haverty Bldg.; Chicago 11, 520 N. Michigan Ave.; Cleveland 15, Hanna Bldg.; Detroit 26, Penobscot Bldg.; Los Angeles 14, 621 S. Hope St.; San Francisco 4, 68 Post St.; Houston, 514 South St. *Correspondents:* Boston, Buffalo, Dallas, Dayton, Denver, Indianapolis, Jacksonville, Kansas City, Knoxville, Lansing, Louisville, Memphis, Miami, Milwaukee, New Orleans, Oklahoma City, Ogden, Philadelphia, Phoenix, Pittsburgh, Portland (Ore.), St. Louis, Salt Lake City, Wichita and 43 other cities.

Foreign News Bureau: London, Paris, Berlin, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Buenos Aires. Correspondents in Athens, Caracas, Santiago, Shanghai, Zurich, Rome, Johannesburg and over 40 other cities.

ECONOMICS STAFF

Dexter M. Keezer, Sanford S. Parker, William F. Butler, John D. Wilson

Robert F. Boger
PUBLISHER

J. C. Anthony
MANAGER

Business Manager, J. G. Johnson

R. W. Martin, Jr., *Sales Manager;* M. J. Storz, New York; L. J. Biel, Philadelphia; V. K. Dissette, Cleveland; A. B. Martin, Chicago; W. G. Ashmore, Atlanta; J. W. Otterson, San Francisco; C. F. McReynolds, Los Angeles. Other sales offices in Pittsburgh, Detroit, St. Louis, Boston and London.

McGRAW-HILL PUBLISHING CO., Inc., Publishing Office, 99-129 N. Broadway, Albany, N. Y. Return postage guaranteed. Editorial and executive offices: 330 W. 42nd St., New York 18; 520 N. Michigan Ave., Chicago 11; 69 Post St., San Francisco 4; Aldwych House, London, W.C. 2; National Press Bldg., Washington 4, D. C.; Architects Bldg., 17th & Sansome Sts., Philadelphia 3; Hanna Bldg., Cleveland 15; 2980 Penobscot Bldg., Detroit 26; Continental Bldg., St. Louis 8; 1427 Statler Bldg., Boston 16; Rhodes-Haverty Bldg., Atlanta 3; 621 S. Hope St., Los Angeles 14; 738-9 Oliver Bldg., Pittsburgh 22. JAMES H. McGRAW, Founder and Honorary Chairman; JAMES H. McGRAW, Jr., President; CURTIS W. McGRAW, Senior Vice-President and Treasurer; JOSEPH A. GERARDI, Secretary; NELSON BOND, Director of Advertising; EUGENE DUFFIELD, Editorial Assistant to President; J. E. BLACKBURN, Jr., Director of Circulation . . . Aviation Week, 330 W. 42nd St., New York 18. Published weekly, price 50¢ a copy, 50¢ in Canada. Allow at least ten days for change of address. Address all communications about subscriptions to Director of Circulation, 330 W. 42nd St., New York 18, N. Y. Subscription rates—United States and possessions, $5 a year, $8 for 2 yr., $10 for 3 yr. Canada, $6 for 1 yr., $10 for 2 yr., $12 for 3 yr., payable in Canadian currency at par. Pan American countries, $10 for one yr., $16 for 2 yr., $20 for 3 yr. All other countries, $20 for 1 yr., $30 for 2 yr., $40 for 3 yr. Please indicate position and company connection on all subscription orders. Entered as second class matter July 16, 1947, at Post Office, Albany, N. Y., under Act of March 3, 1879. Volume 47, Number 22. Printed in U.S.A. Cable address "McGraw-Hill New York." Member A.B.C.

Copyright 1947, McGraw-Hill Publishing Co.

Aviation Week is indexed in "Reader's Guide to Periodical Literature" and in "Industrial Arts Index." Following publications are combined with AVIATION WEEK: AVIATION, AVIATION NEWS, AERONAUTICAL ENGINEERING and AIRCRAFT JOURNAL.

All rights to these names are reserved by McGraw-Hill Publishing Co.

There's ECONOMY in Direct Fuel injection

The Wright fuel injection system—direct injection into the combustion chambers—means greater economy and improved engine performance.

Developed originally for long range military operations by the Wright Aeronautical Corporation in collaboration with the Bendix Aviation Corporation, the direct fuel injection system was first introduced to commercial aviation on the Wright Cyclone 18 engines that now power many of the leading airlines of the world. The principal features of this system are:

▸ **Improved mixture distribution**—Fuel is evenly metered directly to each cylinder under all operating conditions.

▸ **Improved fuel economy**—Uniform distribution permits a leaner basic metering setting.

▸ **Improved stability and smoothness**—Metering, distribution, and vaporization of fuel are controlled.

▸ **Improved starting and acceleration**—Fuel is in combustion chambers the instant engine starts to turn.

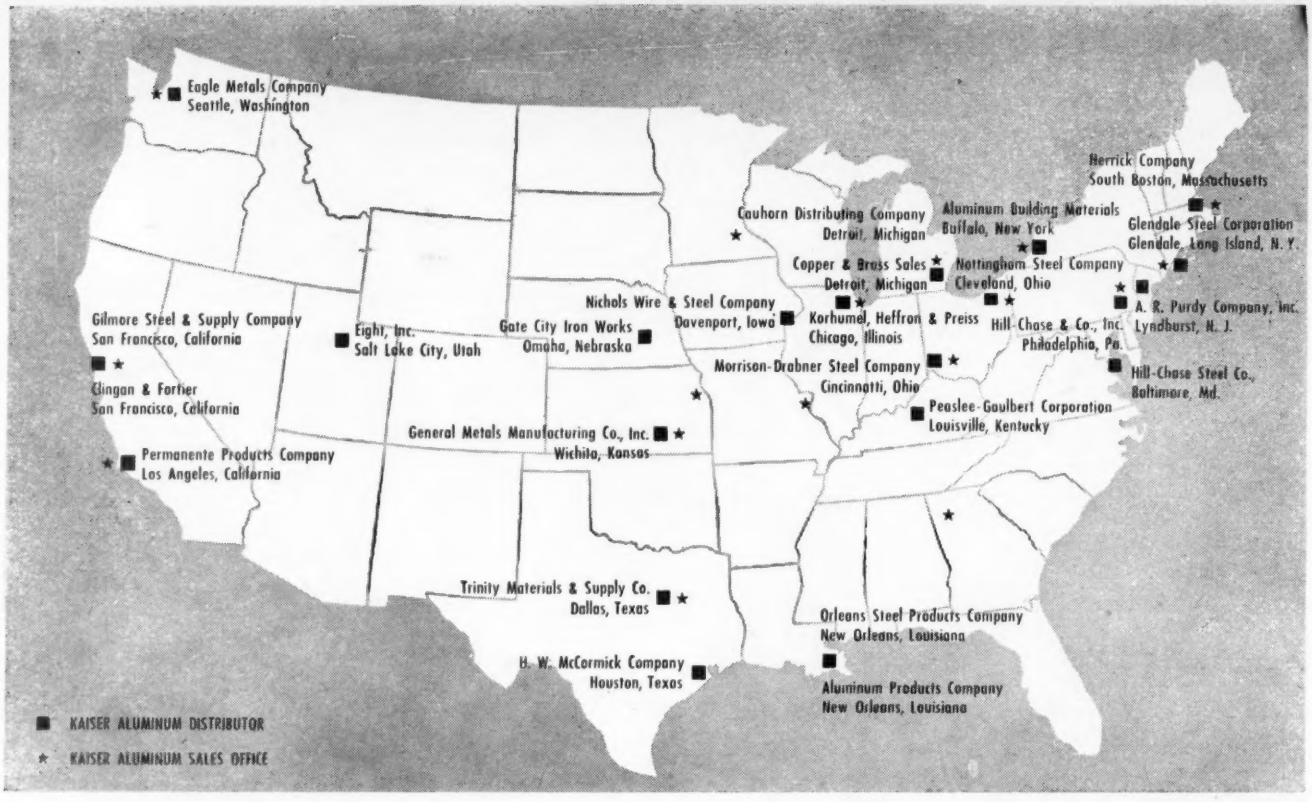
▸ **Induction icing eliminated**—No fuel is vaporized in induction system to cause temperature drop.

The direct fuel injection system is another example of the many engineering advancements made available to the operator on Wright Cyclone engines.

POWER FOR AIR PROGRESS

WRIGHT
AERONAUTICAL CORPORATION
WOOD-RIDGE NEW JERSEY

A DIVISION OF
CURTISS WRIGHT
FIRST IN FLIGHT



Here are your new supply points for Kaiser Aluminum

23 CONVENIENTLY LOCATED DISTRIBUTORS OFFER KAISER ALUMINUM SHEET, PLATE, STRIP, COIL, CIRCLES, ROOFING AND SIDING . . . IN LESS THAN CARLOAD LOTS

Now you can be certain of a close-up source of Kaiser Aluminum . . . *wherever you are located.*

Permanente Products Company is proud to announce the appointment of **23** of the finest material supply houses in the country as distributors of Kaiser Aluminum.

Your local distributor offers complete warehouse stocks of Kaiser Aluminum to meet your immediate needs. No longer need you wait for small carry-over stocks . . . for your local distributor sells in less than carload lots!

This new nationwide network of distributors is in addition, of course, to Permanente Products' 19 sales offices, each ready to help you in solving your engineering problems.

Which means that Permanente Products . . . in only a little over a year of operation . . . now completely rounds out its service facilities . . . to bring you more and better aluminum—*faster!*

Ready to serve you—<u>today</u> . . . 23 conveniently located

Kaiser Aluminum Distributors

PERMANENTE PRODUCTS COMPANY, KAISER BUILDING, OAKLAND 12, CALIFORNIA . . . WITH OFFICES IN:

Seattle • Oakland • Los Angeles • Dallas • Wichita • Kansas City • St. Louis • Atlanta • Minneapolis • Milwaukee • Chicago Cincinnati • Cleveland • Detroit • Boston • Buffalo • New York City • Philadelphia • Washington, D. C.

THE AVIATION WEEK

CLINIC SUM-UP—While far too early to make any definite, long-term assessment of the success or failure of the revamped National Aviation Clinic, those who attended the former years' meetings in Oklahoma City and this latest one in Springfield, Ill., are giving a cautious approval to the new procedure and its potentials for future years.

It was to be expected that with a change in scenery and method of operating, this year's Clinic would be different. It was, and a preliminary assessment would be that the differences were on the credit side.

The improvements by and large stemmed from the unicameral procedure and strict legislative format of the Clinic. There were fewer and better speeches. With most discussion limited to floor debate, delegates had a far greater opportunity than in former years to have their full say.

For the first time, in the minds of any present, this was an "uncontrolled" Clinic in the sense that there was not the usual feeling of an underground machine pulling strings, either in directing the agenda or the voting.

NEW ATMOSPHERE—This created a new atmosphere that was among the clinic's most marked features. There were groups with special causes to plead, but they were many and small so that there was no balance of Power. Result was independent thinking and voting. Delegates for the first time, perhaps, were voting for what a majority thought would help aviation in general, and not one segment in particular.

This situation was salutary not alone for the delegates. In broadest terms, it generated sound, well thought-out criticism. And because of that intrinsic value of the criticism, it had a valuable by-product.

Criticism of CAA and over-regulation, for example, was frequent. But free to answer in debate were assistant secretary of Commerce John Alison, CAA Administrator T. P. Wright and their associates. This was true of all government representatives. To their credit, they made the most of their opportunity, in a reasoned, cooperative manner.

Deprived of the insulation and protection of a desk in a well-appointed government office in Washington, these men for perhaps the first time in a public session responded so ably to criticism that they made friends.

Alison and Wright and their opposite numbers in other government departments have known, of course, the temper of the industry. This has not always been true of some of their assistants. The impression the Clinic debates made on these latter gentlemen hardly can be other than encouraging.

This development would have been even more noteworthy had there been among the delegates members of CAB.

DEBITS, TOO—In striving to draw up a balance sheet of the Clinic, an observer would have to note off-sets to the credits. The quality of the attendance might be listed as disappointing. Executives of the manufacturing industry and of large airlines were fewer than the occasion seemed to call for. One result of this showed in the voting.

Scheduled airlines lost out on the airfreight issue and on several minor matters. Feeder lines, well represented, won everything they proposed.

Also on the debit side—although this is natural—is the fact that the machinery was still too new to be thoroughly effective in all particulars. One of the great values of the Clinic is as a means of getting the state of aviation across to the public. In previous years, the Clinic has been an ideal vehicle of this purpose, attracting main industry leaders and a sizeable press corps, the job of which was simplified and made efficient because the many prepared speeches could be distributed in ample time to assure handling.

Reporting a legislative session is a different type of operation. The clinic, consequently, did not receive the general press coverage it had in former years. To the extent that this diminished public interest in and awareness of aviation's problems, it was a weakness in an otherwise generally acclaimed formula.

FUTURE—That formula, in practice, showed careful planning and laying of groundwork. The rules committee worked hard and opinion is general that it did a fine job in weeding the meritorious bills of policy from crackpot and propaganda offerings. While it laid itself open to criticism that it stifled controversial subjects, there was always recourse to the permissible procedure of introducing bills on the floor.

The actual legislative machinery was well geared, as was shown by a mimeographing and printing set-up that put before each delegate copies of bills or major amendments before or during debate.

This was the hardest working clinic that aviation has yet seen. The rules committee sat until past midnight at least one night; a sightseeing trip was cancelled so delegates could get in an extra session on the floor. Normal sessions began at 10:30 in the morning and ran until 5:30 in the evening.

Whether all this work will result in a continuing, strengthened Clinic is still to be determined by the National Aeronautic Association. On the basis of reactions to date, it appears probably that the sixth annual National Aviation Clinic will be summoned next year. The one that has recently closed may well have a greater influence than those past; and perfection of the technique in a future year could give aviation a more powerful forum than ever before.

NON-CORRODING "ALLENS" for applications where steel is subject to excessive moisture, chemical fumes or corrosive vapors. Made of "18-8 Type" *Stainless*, non-heat treated, non-magnetic. Set screws: stock sizes #6 to ½" diameter; cap screws: #8 to ½". N. C. threads only. Class 3 fit; Allen precision fastenings...Order of your local Allen Distributor, or write us for samples and literature.

THE ALLEN MANUFACTURING COMPANY
HARTFORD 2, . . CONNECTICUT, U. S. A.

NEWS DIGEST

DOMESTIC

President Truman accepted the resignation of General Robert M. Littlejohn as administrator of the War Assets Administration effective Nov. 28. Truman praised him for his "ability, tact and discretion" in carrying out his job since July, 1946.

Henry P. Nelson, wartime head of War Production Board aircraft division, was elected president of Menasco Manufacturing Co., Burbank, Calif. He formerly was vice president and eastern manager for Menasco.

George T. Link, vice president and treasurer of Link Aviation, Inc., Binghamton, N. Y., was named to the National Council of the Committee for the Marshall Plan to Aid European Recovery.

FINANCIAL

Consolidated Vultee Aircraft Corp. reports net loss of $6,264,773 for the nine-month period ending Aug. 31 After giving effect to a tax credit of $18,030,211. Sales for the period amounted to $31,464,578 and backlog now stands at $335,513,427. Convair board voted nine representatives of Avco Manufacturing Corp., thereby assuming management control of the company.

United Aircraft Corp. reports net income of $6,083,205 on sales of $144,084,728 for the first nine months of the year. Directors declared a 75 cent dividend on Nov. 18 payable Dec. 15, bringing to $1 the total dividend for the year. Backlog to Oct. 1 was $275,000,000.

Harvill Corp., Los Angeles aircraft die-casting firm, reports a net loss to surplus of $30,443.70 for the first nine months of its current fiscal year.

Allis-Chalmers Manufacturing Co. reports net income of $1,910,862, equivalent to 76 cents per share, for the third quarter. Deliveries for the period were $142,530,234 and current backlog is $160,000,746.

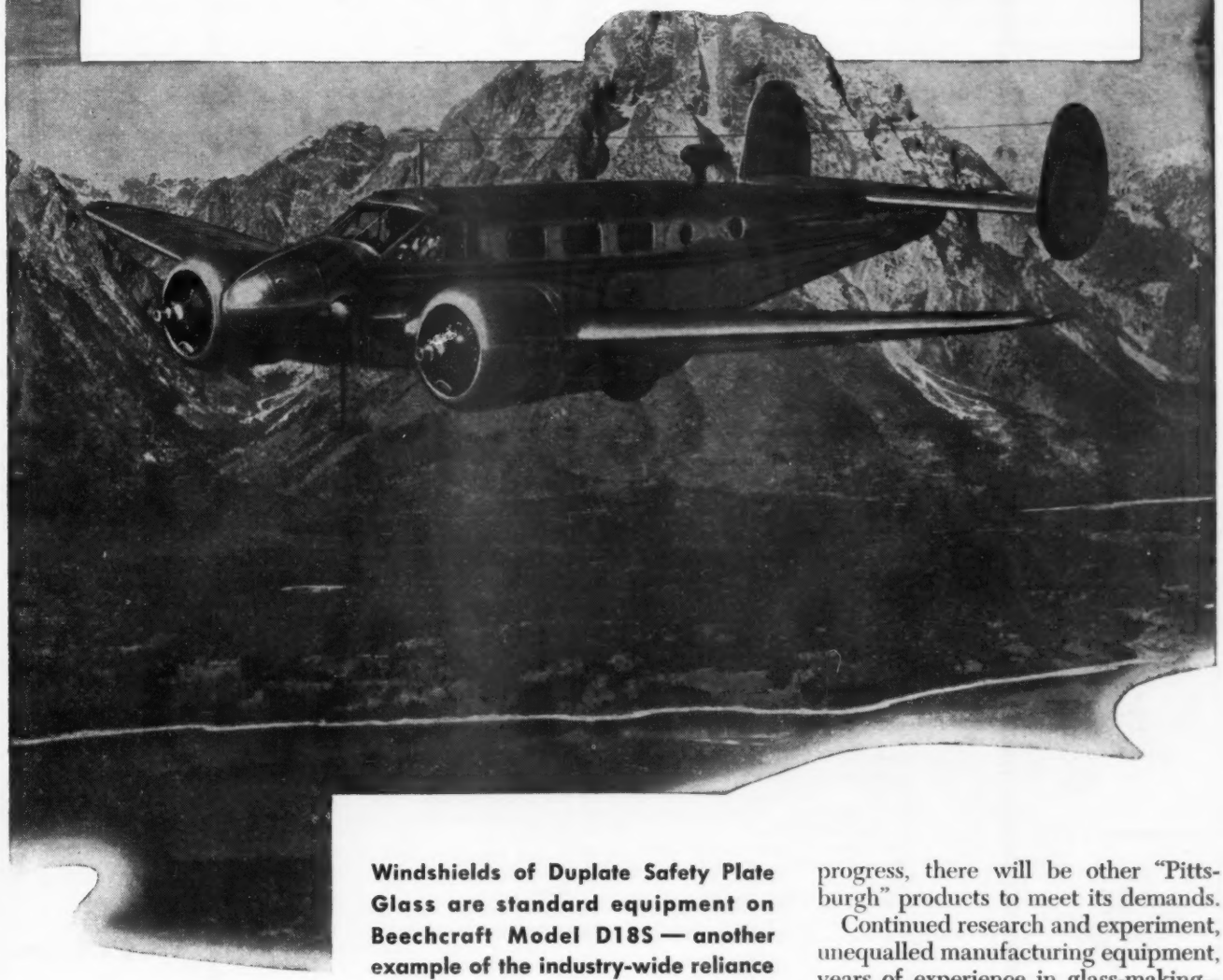
FOREIGN

Purchase of five Lockheed Constellations for overseas service of Czechoslovak Airlines has been proposed to the government by the air department of the ministry of transport at Prague. The carrier intends to use them on a new Prague-New York operation.

Freight charges on all main trunk air routes in Australia are likely to be revised upward following the 20 percent increase in passenger fares last month. Tariff increases are blamed on rising operating costs.

On the Beechcraft Executive Transport

Safety Glass BY "PITTSBURGH"



Windshields of Duplate Safety Plate Glass are standard equipment on Beechcraft Model D18S — another example of the industry-wide reliance on "Pittsburgh" glasses for airplanes.

MANY important advances in airplane design have been made possible by special glasses, plastics, and glass-and-plastic combinations developed by "Pittsburgh." And as the aviation industry continues its phenomenal progress, there will be other "Pittsburgh" products to meet its demands.

Continued research and experiment, unequalled manufacturing equipment, years of experience in glass-making—these are your assurance of highest quality glass and up-to-date glazing techniques.

When you face new problems concerning airplane glass or glazing, write to Pittsburgh Plate Glass Company, Room 2349-7 Grant Building, Pittsburgh, Pennsylvania.

"PITTSBURGH" stands for Quality Glass and Paint

PITTSBURGH PLATE GLASS COMPANY

SPECIALISTS IN AIRPLANE GLASS • MAKERS OF DUPLATE AND FLEXSEAL SAFETY GLASS AND OF MULTIPLATE BULLET-RESISTING GLASS

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
Exide
FLIES THE AIRWAYS WITH THESE FAMOUS EMBLEMS
(How many can you identify. See below.)
Each of the leading airline companies, represented by the trade marks shown here, use Exide Air Transport Batteries. Exides have long been the preferred batteries for airline service because they are built specifically to meet ALL its storage battery needs . . . extra capacity, minimum weight, long life, dependable performance under all flying conditions.
Whatever your storage battery problems, Exide engineers will be glad to help you solve them.
THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32
Exide Batteries of Canada, Limited, Toronto
1 American Airlines, Inc. (Dom.)* American Overseas Airlines, Inc. (Int.)†
2 Braniff International Airways (Int.)
3 Air France (Int.)
4 Mid-Continent Airlines, Inc. (Dom.)
5 National Airlines, Inc. (Dom. and Int.)
6 Trans World Airline (Dom. and Int.)
7 Sabena Belgian Air Lines (Int.)
8 Northeast Airlines (Dom.) Northeast Airlines, Inc. (Int.)
9 Chicago and Southern Air Lines, Inc. (Dom.)
10 Western Airlines, Inc. (Dom.)
11 KLM Royal Dutch Airlines (Int.)
12 Danish Air Lines (D.D.L.) (Int.)
13 Swedish Air Lines (A.B.A.) (Int.) Swedish Intercontinental Airlines (S.I.L.A.) (Int.)
14 Norwegian Airlines (D.N.L.) (Int.)
15 Scandinavian Airlines System (S.A.S.) (Int.)
16 Peruvian International Airways (Int.)
17 Pan American World Airways System (Int.)
18 Eastern Airlines, Inc. (Dom.)
19 Capital Airlines (Dom.)
20 Northwest Airlines, Inc. (Dom.)
21 British Overseas Airways Corp. (Int.)
22 United Air Lines (Dom.)
23 Continental Air Lines, Inc. (Dom.)
24 Linea Aeropostal Venezolana (Int.)
25 Delta Air Lines (Dom.)
26 Colonial Airlines, Inc. (Dom.)
*Dom., Domestic—†Int., International
EXIDE AIR TRANSPORT BATTERIES

NEWS SIDELIGHTS

REVISED PROCUREMENT

Watch for radical revision of Air Force procurement policies. Secretary Symington has hinted at it several times. Fact is, double-barreled reorganization is proceeding under Air Force General Counsel Shaw, to simplify legal snarls in present contract language and procedures, and by Undersecretary Barrows, ex-Sears Roebuck president, dealing with actual procurement and military housekeeping practices. Barrows has a staff of special advisers from business and industry.

Symington is impressed with inability of professional Air Force officers to wrestle with the knotty problems of procurement.

Plan is to train non-flying logistics and procurement experts in the Air Force, aided by civilian consultants, and leave tactics and strategy to the fly boys.

UNDECIDED ON CAB

White House remains undecided on a nominee to fill the Republican vacancy at CAB, according to a recent letter received from the President by Oregon's GOP Senator Morse. Former FCC commissioner Ray Wakefield, California Republican, appears still to be the leading candidate.

Gov. Wallgren of Washington, close friend of Truman, proposes Lou Wasmer, prominent Seattle radio station owner. Meanwhile, business, civic and political groups in Oregon, Washington and Idaho are pow-wowing in attempts to agree on a candidate from the area. Pacific Northwest interests have been sharply critical of CAB actions for some time.

LURE OF THE FLYING BOX CAR

Don't count out the Fairchild Packet in the cargo transport race. Though lacking the graceful silhouette of the superliners, the flying boxcar is still the only designed-for-the-purpose air freighter in production, and its estimated seven cents a ton mile operating cost appeals strongly to the independent cargo carriers.

Months ago Slick Airways approached the Air Force on possibility of borrowing three Packets for a 90-day trial program to determine its detailed costs and utility. Later, California Eastern made a similar request. Air Force refused, claiming it could not spare so many ships for so long a time. But the Pentagon did offer to loan one Packet for 30 days if the cargo lines banded together and jointly determined costs and shared results. So far, there is no news of a reply by the Independent Airfreight Assn. Already in quantity production (237 under contract) the Packet could sell commercially far cheaper than any other new plane now under consideration. Even more promising than the Packet is Fairchild's upcoming detachable cargo container which would cut airplane ground loading time to the few minutes required to attach the container to the four fittings provided.

The container itself could be adaptable to trucks, railroad flat cars or simple towing as a trailer.

BREWSTER HOLDS OFF

Owen Brewster continues titular head of Senate War Investigating Committee, but Sen. Ferguson is the directing force, despite his title of Chairman, "Senate War Investigating Subcommittee."

Since hearings reopened, after last summer's Hughes quiz, Brewster has maintained a "hands-off" policy toward the committee and has attended only one minor hearing, on renegotiation. Ferguson's recent handling of the Meyers case has raised the committee's esteem among senators of both parties.

PESKY LIGHTER-THAN-AIR

Persistent campaign in some quarters for government aid for lighter-than-air construction has kept the subject on the agenda for discussion among government aviation officials of sub-cabinet rank. If the two air policy boards now deliberating turn thumbs down, however, further development of dirigibles will be stymied indenitely.

DRYDEN STEPS IN

Dr. Hugh L. Dryden, new NACA director of research, has effectively dispelled early predictions of a professorial attitude toward his administration of the 6,000-man research agency. Taking the reins carefully from the venerable Dr. George W. Lewis, Dryden made an extensive tour of all NACA installations and reviewed existing procedures and programs with a critical eye. Observers now report he has gone into action quietly: (1) He has brought into Washington from the laboratories top-notch research specialists, and placed them in administrative posts, replacing predominantly clerical personnel; (2) He is strengthening technical committees and subcommittees, and streamlining their procedures on the basis of his 20-year experience as a subcommittee member; (3) He is taking a more aggressive stand on appropriation requests to prevent more charges by Congress that NACA has not in the past asked for as much money as it thought it really needed. The 1949 NACA budget request is expected to be considerably higher than ever before.

CAB CUTS BACKLOG

For the first time since April, CAB in October made progress against its mountainous backlog of dockets. Pending cases dropped from 1,206 on Sept. 30 to 1,184 on Oct. 31. Big reason is that new route applications have been gathering dust for periods up to three years. Applicants threw up their hands and asked for dismissals without hearing.

AIRMAIL RATE QUIZ

That House Post Office Subcommittee led by Edward Rees, Kansas Republican, expects to launch hearings the first week in December in its investigation of airmail rates and payments.

Rees has suggested that airmail postage go to seven cents an ounce, and that "cost plus reasonable profit" payments to airlines for mail be separated from "subsidy" payments. This would fully reveal government aid, he claims. The subcommittee says it invites testimony from all interested parties.

MORE MAIL PAY HIKES

Airline executives maintain they have cut expenses as deeply as safety permits. Significant results have been accomplished in slicing operating costs. But wages and materials keep soaring, and threaten to wipe out the economies. There is every indication CAB will be compelled to jack up mail pay or see a repetition of the industry's financial crises of last winter.

Vol. 47 No. 22

AVIATION WEEK

Dec. 1, 1947

INCORPORATING AVIATION AND AVIATION NEWS

Aviation Clinic Acts to Bolster Air Force, Boost Private Flying

Asks repeal of transport tax; establishment of air parcel post and more use of helicopters.

By ALEXANDER McSURELY

Previous records for marathon free-style aviation argumentation were shattered (in an aviation industry which has always loved to spend long hours talking about itself) when throat-weary delegates to the fifth annual National Aviation Clinic at Springfield, Ill., finally were prevailed upon to go home.

The 98 Clinic delegates represented virtually all phases of aviation except one. Aviation labor groups were not included in the classifications of delegates setup by the executive committee.

Slightly bewildered by the new style legislative procedure, an innovation not used in the four previous Clinics, and by the enormous pile of bills of policy which awaited their action, delegates proceeded slowly during the first morning Clinic session.

But expert guidance of such Clinic leaders as Robert Ramspeck, ATA executive vice president and former Democratic party whip in Congress; Illinois Governor Dwight Green, and L. Welch Pogue, former CAB chairman, who presided as Clinic speaker, soon stepped up the tempo.

Clinic unanimity on subjects of national defense, aviation education, development and research, gave strong emphasis to their importance on aviation's continued growth and well-being.

Rules committee, headed by Ray Nyemaster, Des Moines, was authorized in bill 75 adopted by the Clinic, to implement bills of policy adopted, by holding subsequent meetings and to assign responsibility of taking "any and all necessary action to the successful conclusions of the bills."

It is presumed that the bills passed will be studied with more than passing interest by the President's Air Policy Commission and the Congressional Joint Committe on Air Policy. Rules committee is instructed to make quarterly interim reports on any progress made in implementing the bills, and to make a full report of its activities and accomplishments to the sixth National Aviation Clinic. Time and location have not yet been announced.

Delegates approved five principal bills relating to national defense and calling for:

• **Annual procurement of** military aircraft adjusted immediately to comply with the recommendations of the 1945 Air Coordinating Committee recommendation of 5,780 planes during existing conditions, and not below a 3,000 plane minimum when world peace is assured.

• **Continuing long range** procurement program of military aircraft so that manufacturers can plan with maximum efficiency, employing engineering and production methods that will contribute to rapid expansion in war emergency.

• **Immediate supplemental** appropriations by Congress for strengthening the Air Force and Naval Aviation.

• **Raising Air Force reserve** status to a parity with other reserves, providing them with modern combat equipment including that suitable for small field use, and study of merging Air Force reserve and Air National Guard for unified command and efficient use of national defense funds.

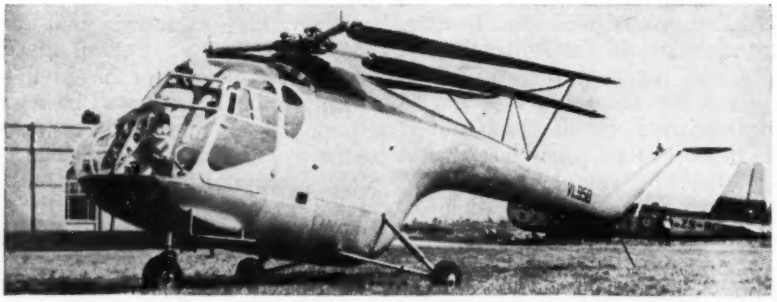
• **Development of a comprehensive** air industrial preparedness plan in readiness for a production expansion of more than 1,000 percent "literally overnight" when combat begins.

Bills relating to personal aircraft, small airports, and private flyer regulations provoked some of the hottest Clinic debates.

A bill proposing that the federal government discontinue its practice of certificating personal plane airworthiness, introduced by Arthur Boreman, NAA president, provoked little response from manufacturers' representatives among the delegates, until Boerman called upon them personally to express their opinions, on whether they desired such manufacturing freedom. William T. Piper, president of Piper Aircraft Corp., replied:

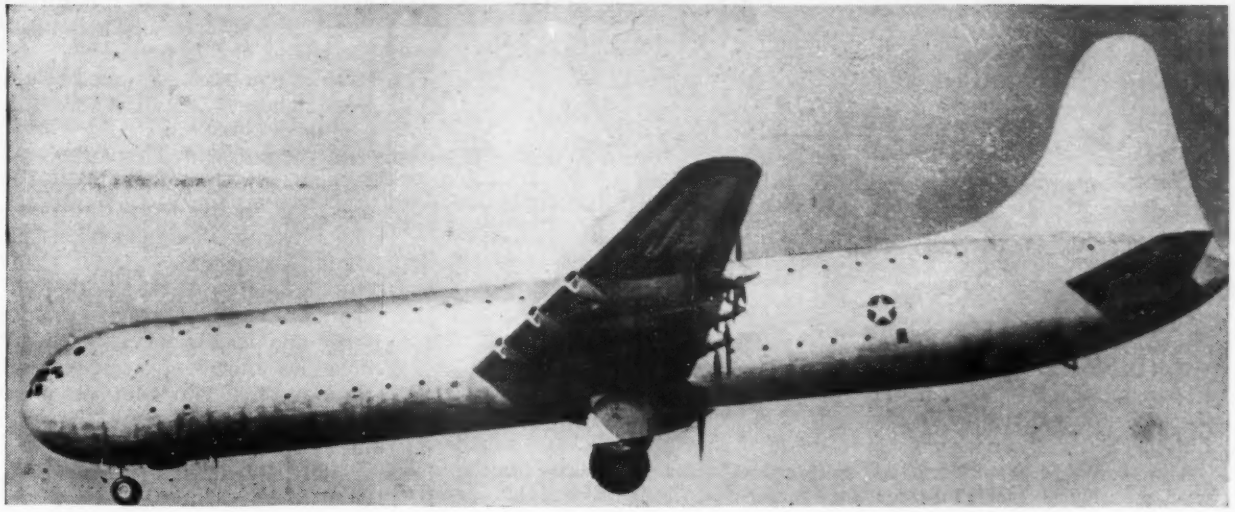
"You ought to make the manufacturer ride around in the plane for 500 hr. and if it is all right then, turn it loose."

▶ **Wright Proposal**—A less drastic substitute measure, proposed by CAA Administrator T. P. Wright, was finally adopted. It urged that Congress approve a policy which would allow CAA to authorize any manufacturer to certificate his own aircraft, after determining that he is equipped adequately with



BRITAIN'S FIRST COMMERCIAL HELICOPTER

Prototype of the Bristol 171 England's first commercial helicopter recently made its first flight. Photo above shows the four place machine, which is adaptable for use as an air taxi, feeder service plane, rescue machine or artillery spotter. Design incorporates new safety features. Main rotor blades fold towards the rear and are supported on a parking rest to reduce danger of damage from wind or ground handling. Two prototypes have been ordered by the Ministry of Supply, one equipped with a Pratt and Whitney engine and the other with an Alvis Leonides engine. Production models probably will be equipped with the Alvis Leonides. Larger versions of the craft are already planned. (British Combine Photo)



FIRST FLIGHT OF XC-99, BIGGEST LAND PLANE, LAUNCHES YEAR OF TESTS

The Convair-built XC-99, shown returning to Lindbergh Field, San Diego, last week after its 1 hr. 2 min. maiden flight, will be tested for about a year before it is turned over to the Air Force. The $15,000,000 Consolidated Vultee estimates was spent to create it makes it the runner-up to Howard Hughes' flying boat in taxpayer capital investment. With its flight, the west coast aircraft industry scored its third major plane test flight in two months, with the fourth expected today with the initial takeoff at Seattle of Boeing Aircraft's six-engine swept-wing bomber, the XB-47. First flight of Northrop Aircraft's YB-49 eight-jet bomber paced the series, with Hughes' flying boat taking the air soon after. (IN Photo.)

prescribed air-worthiness standards. Effect of such a policy could be just as liberal, or just as confining, as CAA officials chose to make it, in the event Congress approved the policy.

Other personal plane bills approved called for:

• **Development of a "good roadable airplane** or flying automobile at the earliest date possible."

• **Research to make possible** lower landing speeds.

• **Federal appropriations** to finance research and development to improve personal aircraft. Piper asked: "Who is going to get the money?" and J. B. Hartranft, AOPA general manager and one of the bill sponsors replied: "Combined resources of the present industry cannot provide the needed research. Successful formula for government sponsorship of development has already been demonstrated in the CAA contracts for cross wind landing gears."

• **Federal legislation** to provide minimum safe airports (sub-class 1) at each of 16,000 incorporated U. S. communities. A CAA-sponsored amendment "soft-pedaling" the bill's criticism of the present airport program and its "voluminous and involved requirements" failed.

Modification of a bill calling for blanket endorsement of International Civil Aviation Organization was urged by Hartranft, who pointed out the potential limiting effect of the international regulations of this organization on the member countries.

► **CAA Attacked**—A bill which attacked the CAA's "complete failure" in administration of the airport aid program and asked Congress if necessary to turn administration of the program over to some other agency, was tabled, and later withdrawn. A more moderate substitute measure later passed urged that the Civil Aeronautics Act of 1938 be reviewed with enactment of "such amendments as are necessary." This bill pointed out that both CAB and CAA have been and are subjected to criticism for actions they take "using wide discretionary powers" based on their interpretation of the statutes, and that the growth of aviation has created situations not provided for in the Act.

Another bill asking nullification of CAA's requirement for certification of aircraft mechanics, for any aircraft, engines, propellers and appliances which are not used in carrier, or contract operations, was defeated, while the Clinic passed a measure calling for stricter conditions for issuance of aircraft and engine mechanic certificates. This bill calls for documentary evidence of satisfactory experience, frequent changes of examination questions to preserve secrecy, and tests including not less than eight hours of practical shop work on various aircraft repair problems.

Still other important policy bills approved by the Clinic delegates urged:

• Repeal of the wartime 15 percent transportation tax on persons and 3 percent tax on property.

• Adoption of a policy utilizing civilian facilities for Air Force pilot training, technician training and aircraft repair, if studies of value, efficiency and comparable expense indicate the wisdom of this action.

• Exclusive jurisdiction by federal government over economic and safety regulations of common carrier air operations.

• Simplification of international air travel regulations.

Convaircar Crash

Early engineering reports after the crash of the fuel-starved Convair experimental flying automobile, indicate that the Convaircar may be an advancement in crash protection design for occupants. Test pilot Reuben Snodgrass set the auto-plane down at more than 50 mph. during a test flight at Chula Vista, Calif., when he ran out of gas. The plane crashed into an embankment in the landing.

Presumably the auto-body frame and the elasticity of the glass-plastic absorbed much of the initial shock. Front baggage compartment also acted as a buffer. The rear-mounted Crosley Cobra engine remained fast in its mounting. The flight component, which attaches to the roof of the car, was not seriously damaged. First reports indicated that replacement of the damaged body would be the only major repair needed on the experimental Convaircar and that it might be flying again in a very short time.

Artist's impression of McDonnell XP-85 "parasite fighter" reveals barrel-shaped fuselage and "sky hook" probably retractable for contacting Convair B-36A belly trapeze. Odd combination of tail surfaces is one of many tested to provide stability for the tricky fighter. Note sweep back in wing, which has negative dihedral, a feature necessary in high-speed swept wing designs. Craft has no landing gear—must be air launched and retrieved aboard "mother" plane.

Parasite Jet Fighter Due for Test

McDonnell jet strives to solve unusual design problems as appendage of B-36 bomber.

U. S. Air Force's radical new "parasite fighter", the McDonnell XP-85, is scheduled for completion and test flight in the next few weeks at the company's Lambert-St. Louis airport plant. First air launch is planned from the belly of a modified Boeing B-29 Superfortress, there being no Convair B-36A available for the experiment. Since the tiny, 2½-ton fighter has no landing gear it is equipped with a "dirigible hook", similar to those used on Curtiss F9C-2 Sparrow-Hawk fighters on the Akron and Macon dirigibles.

Original experimental contract for two XP-85 flight articles and a static test plane has been augmented to 15 for service tests. B-36A's will be available for extensive tactical testing coincident with the delivery of the production P-85. The tiny craft, three of which can fit into a B-36A bomb-bay, has a span of 21 ft. and is only 15 ft. long. Wings fold for stowage within the bomber and are opened outside on the launching "trapeze".

▶ **Speed 650 Mph.**—Powered by a single Westinghouse 24C axial-flow turbo-jet engine of 3,000 lb. static thrust, the barrel-shaped fighter has a top speed of better than 650 mph. and is capable of operating at 45,000-ft. altitudes. A major feature is a tremendous rate-of-climb, considerably greater than any current fighter. Armed with four .50-cal. machine guns, the P-85 extends the range and hitting power of the B-36A defensive armament tremendously over the bomber's eight twin-20mm turrets.

Radical in every detail, the design of the P-85 posed complex problems of stability and control, particularly on tail configuration. An extremely short fuselage and swept-back wings aggravates the stability problem, to a point where it may not be completely solved until actual flight tests provide the best design.

▶ **Thorough Tests**—New Air Force contract for service test quantity of the P-85 assures the unique craft a thorough wringing out at the hands of Air Materiel Command test pilots and indicates air force determination to exhaust the potentialities of the "parasite fighter" as a new tactical concept in long-range bomber defensive armament. However, there are strong indications that the idea is slated for eventual abandonment.

Gen. George C. Kenney, commanding general, U. S. Air Force Strategic Air Command, who will direct the tactical development and employment of the B-36A, is doubtful of the value of the parasite fighter because of difficulties of retrieving the planes after their small amount of fuel is used (AVIATION WEEK, Aug. 18).

If combat continues the bomber which slows down to "latch on" a spent fighter is in jeopardy.

It would be difficult for a fighter pilot to find the "mother" plane which he had originally left and if he hooked on to another he would be taking the place of another parasite.

With three fighters aboard the B-36A there is little if any space left for the stowage of bombs.

This Curtiss F9C-2 Sparrowhawk Navy fighter was developed for parasite operations with Macon and Akron dirigibles in the early 'thirties. Hook and rail extending above fuselage was engaged by dirigible trapeze, after which the tiny fighter was drawn up into the interior of the airship. This photo shows H. B. (Min) Miller, (later Rear Admiral and now executive director of Congressional Air Policy Committee) who pioneered the early development of the "flying trapeze" idea, piloting the original Sparrowhawk during an early test flight.

New Aero Lab

The University of Minnesota will build a new mechanical-aeronautical engineering building within the next 15 months to cost $2,108,235.01. One shop will be large enough to accommodate a complete airplane. A helicopter landing platform and a meteorological laboratory will be constructed on the roof. The aeronautical wing will include a high altitude testing laboratory in which conditions for high altitude flight can be reproduced.

Air Force Strips Medals, Pay From Meyers, Plans Court Martial

Justice Department directs grand jury investigation of former Wright Field officer's affairs; income tax probe also under way as result of Senate hearings.

Senate War Investigating Subcommittee's curtain call on hearings dealing with the wartime activities of Maj. Gen. Bennett E. Meyers last week opened the way for major new developments stemming from the investigation. These were:

• (1) Investigations by the Justice Department, Internal Revenue Bureau, and War Department, pointing to prosecution of the former deputy chief of Army Air Force procurement got underway. Attorney General Tom Clark directed an immediate grand jury probe of Meyers, who faces possible charges carrying a total maximum penalty of 39 years imprisonment and $29,500 in fines: war fraud, maximum penalty, $10,000 fine and 10 years imprisonment; perjury, $2,000 fine and five years imprisonment; subornation (procuring witnesses to falsify under oath), $2,000 fine and five years; bribery; extortion, $500 and one year; conspiracy to defraud, $10,000 and ten years; income tax evasion, $5,000 and five years on each count. There may also be charges of blackmail and violation of a criminal code barring procurement officials from holding stock in firms with which they deal as government representatives.

Secretary of the Air Force Symington announced that Meyers had been stripped of his war time medals and pay as a retired Air Force officer and that the Air Force would court martial Meyers on charges of "conduct unbecoming an officer" regardless of the outcome of the civil actions against him. Symington indicated that any additional charges against Meyer that are not dealth with in a civil court will be included in the Air Force court martial.

Meyers holds the Distinguished Service Medal and Legion of Merit—highest awards for noncombatant service and collects retirement pay of $550 a month. Symington admitted that there was some question regarding the legality of the Air Force action but said that organization wanted to be in the position of forcing Meyers to take legal action to attempt to recover either his medals or pay. Symington said the Air Force was determined that Meyers would not take another dollar from the United States Treasury.

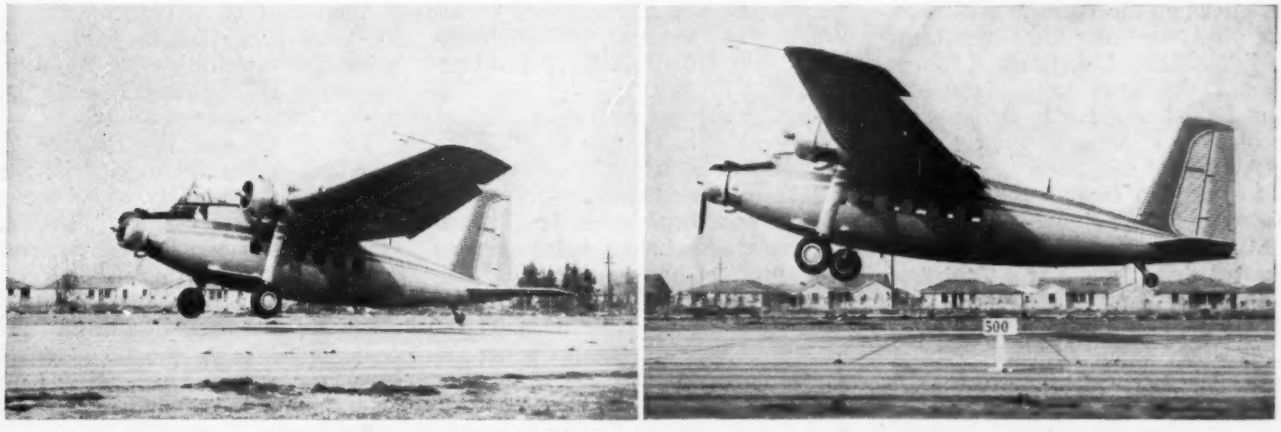
• (2) Justice Department opened its query into charges last summer between planemaker Howard Hughes and Sen. Owen Brewster (R., Me.), chairman of the Senate War Investigating Committee. Hughes charged that Brewster, at the behest of Pan American Airways, attempted to coerce him into a merger of his TWA with PAA under the threat of an investigation of his wartime flying boat and reconnaissance plane contracts. Denying the allegation, Brewster counter-charged that a Hughes attorney (Hugh Fulton) attempted to pressure him into calling off the inquiry. A dearth of evidence, it appears, will make charges difficult to sufficiently substantiate for legal action. It is understood that Justice is eyeing possible failure of PAA employes engaged in lobbying activities to register with the clerk of the House of Representatives, as required under the 1946 Congressional Reorganization Act.

• (3) War Investigating Subcommittee, headed by Sen. Homer Ferguson (R., Mich.), launched into new investigations of wartime procurement, including "side issues" developed from the Meyers investigation, and studies looking to possible revisions in military procedures. A recommendation by the subcommittee that the military establishments' investigator agencies be separated from the chain of command appears assured in view of the mass of evidence indicating a tendency of command to cover its own errors.

▶ **Arnold Testimony**—Testimony by H. H. (Hap.) Arnold, referring to Meyers as "a rotten apple", whose "gross misconduct" has "disgraced his uniform and his rank" and reflected "on the three million men and women who served in the Air Force" furnished the finale for the Meyers hearings.

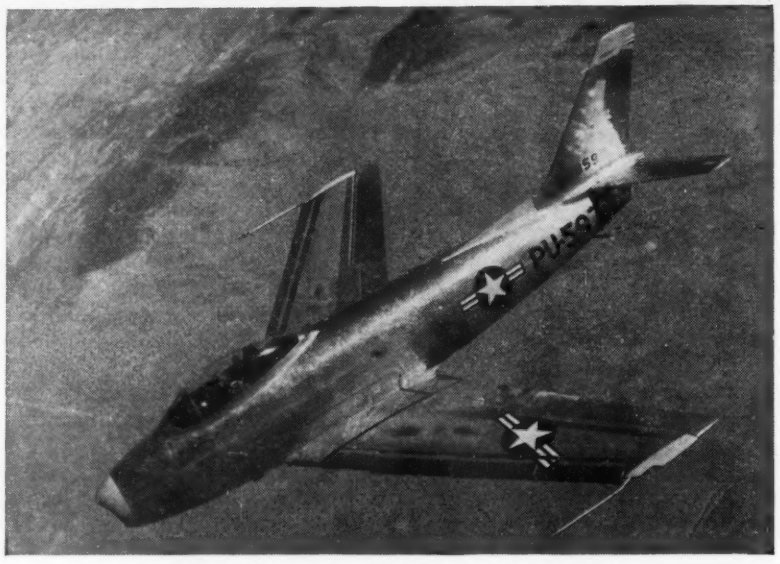
The climax of Arnold's appearance was his declaration of "effrontery and absolute lie" to Meyers' allegation that he (Arnold) knew of and condoned Meyers' stockholdings in aviation firms, amounting to over $35,000.

After reporting on a questionnaire, ordered by Arnold, that his total aviation stock holdings were 200 shares of General Electric, Meyers related, he verbally informed Arnold of his $35,000 additional aviation holdings in the process of being transferred to his wife's account, under her maiden name, Ila Rae Curnutt. Arnold's response, according to Meyers, was: "Benny, God



NORTHROP PIONEER TAKES OFF SHORT

Northrop Pioneer, "backyard airliner," illustrates phenomenally short takeoff by getting airborne in 390 ft. With 800 hp. Wright Cyclone engines replacing the 600 hp. P&W Wasps, the new version hops off in photo at right at 390 ft. with 23,000 lb. gross and passes 500 ft. marker at left well in the air against nine mph. wind. Northrop engineers guarantee a 700 ft. takeoff at full gross weight at 25,500 lb. Northrop has completed float and ski version designs as well as other versions.



FIRST FLIGHT VIEW OF XP-86

North American's new swept-wing fighter, the XP-86, is shown here in flight with extra-large leading edge slots extended during slow-speed flight. Sweepback aggravates the stalling tendencies of a wing and the super slots shown here are required to lower the landing speed of the fast fighter to the required 100 mph. mark. Special airspeed heads contain sensitive vanes which record yaw, pitch and roll angles and airflow fluctuations during maneuvers.

damnit, use your own judgment" about holding or selling.

▶ **Smart Filed Letter**—While stipulating that "if we were at fault. . . . We must admit our fault", Arnold hedged at indicting the AAF for its failure to investigate Meyers, but paid tribute to "the great service" of the Senate subcommittee in unearthing his activities. Meyers had called on Senate president, Arthur Vandenberg, to ascertain whether Ferguson was "prejudiced" against him. The much-publicized "anonymous letter" calling for an investigation of Meyers in 1945, Arnold said, had never come to his attention, and at the time of its arrival at AAF headquarters he was attending the Potsdam conference. The word "file" over the initials of Arnold's assistant, Col. Jacob E. Smart, doomed the letter to a pigeon-hole. "But I think it unfair to attribute this decision to a desire to protect 'brass hats'," Arnold said, "and . . . I should find it hard to censure the man who made the decision."

Maj. Gen. Junius Jones, air inspector, reported that it was AAF's Commanding General, Carl Spaatz, who made the decision to withhold the "anonymous letter" from the Senate subcommittee when it was requested in May, Spaatz also made the decision to withhold a memorandum, written by Jones' aide, Col. John Price, recommending that the letter be not turned over to the Senate group in view of the failure of AAF headquarters to follow through on its demand for an investigation of Meyers. Jones stated that he did not concur in Price's recommendation and now has "plans for his transfer". The subcommittee obtained the memoranda after an appeal to Air Force secretary, W. Stuart Symington.

▶ **Testimony Highlights**—Highlights of testimony preceding Arnold's appearance before the subcommittee were:

Evidence that Meyers received a grand total of over $218,000, mainly in the form of "kickbacks", from Aviation Electric—the Dayton firm Bleriot Lamarre, its "president" reported, was set up in 1940 by Meyers as a "front". It was dissolved in 1945. The evidence was buttressed by cancelled checks of Aviation Electric, made in payments for Meyers' debts: decoration of his Washington apartment, $10,000; Cadillac, $3,000; radio, $700; air conditioning unit, $825, etc.

Lamarre's testimony that he obtained $50-a-week from the firm and that the large sums listed as his "executive salary" and "executive expense" were paid to Meyers was corroborated by Thomas Readnower, his brother-in-law, also an "executive" of Aviation Electric. Readnower testified that he received $25-a-week from the firm, the remainder of his $15,000-a-year salary going to Meyers.

Meyers denial of receiving the "kickbacks" and assertion that he "never received one cent of profit" from Aviation Electric, prompted the query from Ferguson: "How do you account for the fact that we have traced that money to your bank account and cannot find it in theirs? The General contended that he established the firm to "fulfill an obligation" (Lamarre's wife, Mildred, he said, was his "girl friend" from 1938 to 1940) by helping two people get a start in life."

▶ **War Firm Business**—Aviation Electric, which had a total wartime business of $1,343,244, did subcontracting for: Bell Aircraft, $1,053,297; Republic Aviation, $326,587; Curtiss-Wright, $10,002; Glenn Martin, $19,263; a $19,857 Signal Corps prime contract was completed in 1940, at a $30,000 loss.

R. A. Curnutt, a $40-a-week bus driver, was installed as $12,000-a-year vice president in charge of production at Aviation Electric (on Meyers' order, according to Lamarre) late in 1942, a month before Meyers' marriage to his daughter, Ila Rae. Of the $29,000 paid Curnutt on severance from the firm, $21,000 was deposited to his daughter's account.

Lamarre testified that Meyers concocted "the false tale he told the subcommittee this summer in executive session of squandering huge sums he received from Aviation Electric and Denning kickbacks" to Meyers. The general he said, had offered him "some nice money" for testifying falsely. Readnower reported that he refused to collaborate on the false testimony in the executive session, despite Meyers' pressure.

Robert Cruse, production head of Vimalert Company, Jersey City, reported that, after years of effort, he obtained his first Air Forces contract in July, 1944, after making Meyers a loan of $25,000 on June 22. The $470,000 contract for B-29 exhaust joints yielded a profit after taxes of $4,000, he said, and he has received a $3,000 repayment from Meyers on the loan.

DuPont's Interlocking Directorship Disapproved

Application of A. Felix duPont, Jr., for CAB permission to hold at the same time directorships of All American Aviation, Inc., and Piasecki Helicopter Corp. has been denied.

The Board said that because All American desires duPont's advice with respect to the usability of helicopters in its future operations it might be adverse to the public interest to permit him to hold directorships in both companies. CAB noted that the Piasecki PV-3 ten-passenger dual-bladed helicopter now being produced for the Navy is a transport-type craft and may be economically feasible for airline use.

Reaffirming a position taken in a number of similar cases, the Board indicated belief that All American's freedom to choose the type equipment best suited to its operations conceivably could be affected by duPont's holding dual directorships.

Fairchild Gets Contract For 37 Cargo Planes

Fairchild Aircraft Division has received a $22,000,000 Air Force contract for the production of 37 model C-119 cargo planes. First production model is scheduled for completion mid-August, 1948. Contract is scheduled to end in June, 1949.

The new C-119 is an improved C-82 Packet powered by two Pratt & Whitney Wasp Major engines developing 3250 hp. each. Major change is the relocation of the flight deck forward in the nose from its former position atop the fuselage. The fuselage is 14 in. wider and wings of greater strength increase the gross weight of the new plane 10-tons to 72,000 lb. and increased the hull capacity to 3095 cu. ft. Cruising speed has been upped from 214 to 231 mph. at 10,000 ft.

A prototype C-119A first flew the second week in November and test flights are continuing. This airplane is a modified production C-82 designed to test the new configuration in flight. The new wider fuselage will not be used until the first C-119B production aircraft.

The new Packet will be the first aircraft produced under full-expansibility. Tooling and production planning and shop layout, jigs and fixtures have been designed specifically for rapid expansion of production in the event of a national emergency.

AVIATION CALENDAR

Dec. 1-3. Air transport meeting, Society of Automotive Engineers, Hotel Continental, Kansas City.
Dec. 1-3. Fifth annual meeting, Aviation Distributors and Manufacturers Association, Hotel Adolphus, Dallas, Texas.
Dec. 1-5. American Society of Mechanical Engineers, Chalfonte-Haddon Hall, Atlantic City, N. J.
Dec. 2. Air Transport Association air traffic conference, Washington.
Dec. 3. Air Transport Association board of directors meeting, Washington.
Dec. 3-4. Aircraft Industries Association board of governors, Los Angeles.
Dec. 4-5. Air Transport Association meeting of members, Washington.
Dec. 4-6. Society for Experimental Stress Analysis, annual meeting, Hotel Pennsylvania, New York.
Dec. 4-7. International aviation celebration, El Paso.
Dec. 5. Meeting of Air Transport Association directors for 1948, Washington.
Dec. 10-12. Government-industry meeting on AN9500 series specifications, New York City.
Dec. 17. Annual Wright Brothers Lecture, Washington.
Jan. 7-30. Air Transportation Institute, American University, Washington, D. C.
Jan. 9-11. All-American air maneuvers, Miami.
Jan. 13. ICAO statistics division, Montreal.
Jan. 15-18. Southeastern soaring contest, Sanford, Florida.
Jan. 26-28. CAA non-scheduled operators of region four, Fort Worth.
Mar. 22. ICAO aeronautical maps and charts division, Brussels.

INDUSTRY OBSERVER

► **Grumman's specially modified Widgeon will have three interchangeable hulls for Navy tests on new type flying boat hull designs. First test will be made with a Martin P5M-1 style hull which features a high length-beam ratio, a shallow step and an unusually long afterbody. This hull design is expected to improve aerodynamic efficiency by about 4 percent over former Martin PBM designs with a 20 percent increase in hydrodynamic efficiency. Second series of tests will be run with an NACA developed planing tail hull which promises a 50 percent improvement over conventional designs both hydrodynamically and in the air. Third test will feature a variable type of planing tail hull designed to test a variety of modifications on the basic design.**

► Trend of Navy flying boat design, as evidenced by the Convair P5Y and the Martin P5M, indicates rough water performance will continue to be the paramount consideration. Full potentialities of new flying boat design data will not be realized in development of transport types.

► **Air Force All-Weather Flying Center at Wilmington, Ohio has developed a novel safety cover for pilot tubes. Pilot tube cover is held together by a fastener linked to a large round canvas disc. If pitot tube cover is inadvertently left on the tube the canvas disc folds back when the airplane reaches 50 mph. during take-off and unfastens the cover allowing it to fall free. Malfunction of airspeed indicators due to failure to remove pitot tube covers before take-off is a common cause of accidents.**

► American aircraft manufacturers have evidenced little interest in a proposal to organize an international aircraft manufacturers association.

► **Continuance of the Arcata Landing Aids Experiment Station is assured at least until the end of 1949. Air Force, Navy and Civil Aeronautics Administration have earmarked $200,000 apiece in their budgets to finance the project under CAA supervision.**

► Prototype of the Westland Wyvern, new British Navy fighter crashed killing test pilot Peter Garner recently after a failure of one of its two contra-rotating propellors.

► **Gloster is working on a new jet fighter powered by a single Nene.**

► British expect to have two jet powered transports flying before the end of the year —the Tudor III powered by four Nenes and the Viking with two Nenes.

► **DeHavilland is building the prototype of its jet-powered flying wing transport—the DH 106 to be powered by four Ghost turbojets.**

► Engineering & Research Corp. is experimenting with an enlarged twin-tail for the Ercoupe. Main advantage will be for interchangeable use on the new four-place Ercoupe four which is likely to be on the market next spring. Both planes will also use same tailcones.

► **Luscombe Airplane Corp. has been painting those $2,295 signs on its 65 hp. trainer specials at the factory with quick removable paint, and will use the same process in advertising its new four-place Silvaire sedan at $6,994.**

► Piper Aircraft may also use the new 145 hp. Continental in its four-place modification of the three-place Piper Supercruiser, which is due out soon. Original plan was to use the 100 hp. Lycoming which powers the three-placer.

► **At least two manufacturers are preparing for factory installations of the safe-flight (Greene) stall warning indicator, on their next year's airplanes. Indicator is expected to be standard equipment on at least one of the planes, probably both.**

► Two new Continental engines of 145 and 90 hp. will be powerplants on many of the 1948 personal airplane. One, the C-145, is developed from the C-125, while the second is a development of the standard C-85 powerplant for two-placers, which is rated at 90 hp. in its revised version although turning at 100 rpm. less than the rated power rpm. of the 85 hp. engine.

► **Aeronca Aircraft Corp. is preparing to move into the four-place competition. with a new airplane due to be ready next spring. The first four-placer Aeronca will be powered with the new C-145 Continental engine.**

Odlum Heads Convair In Management Shift

New chairman, nine month financial report, point to continued Liner production.

Definite but oblique assurances that Consolidated Vultee Aircraft Corp. will continue manufacture and sales of its Convair Liner are seen in the statement of Floyd B. Odlum as he assumed chairmanship of the company, and in a nine-months' financial report released concurrently by retiring chairman Irving B. Babcock.

The stock prospectus issued at the time the proposal was advanced to transfer control of Convair from Avco to Atlas Corp. cast strong doubts upon the continuance of the Liner project beyond the Convair fiscal year which closed yesterday. When the transfer became official and Odlum took over his new post last fortnight, he declared:

"Heavy losses (on the Liner) have been incurred during the year drawing to a close and further substantial losses during 1948 seem almost a certainty. The Convair Liner . . . should be in operation on several of the country's airlines next Spring."

▶ **Inventory Write-Off**—Babcock's financial report showed a writing-off of $14,000,000 work-in-process inventories on the Liner and restoration to earned surplus account of a $19,000,000 postwar reserve. The only reason speculation arose about the possible dropping of the Liner project was because the fiscal year just ended was Convair's last chance to carry back current losses against wartime (1945) profits. Instead, Convair is wiping off part of its loss through the carry-back device by writing off a good portion of the Liner inventories. This makes unnecessary the carrying of the postwar reserve.

For the nine months, Convair lost $6,264,773 after provision for tax carryback credits of $18,030,211. Sales during the period totaled $31,464,578, leaving a backlog of $335,513,427.

In the switch of control of Convair from Avco to Atlas, nine directors, including Babcock, resigned. Others were: George E. Allen, Victor Emanuel, R. S. Pruitt, Neal Dow Becker, Francis A. Callery, Rudolph H. Deetjen, C. Coburn Darling and J. Mason Houghland.

▶ **New Directors**—To replace these men, who represented Avco on the board, Atlas selected: C. E. Groesbeck, director and consultant of Electric Bond and Share; Oswald L. Johnston, of the law firm of Simpson Thacher and Bartlett; Sydney R. Inch, vice chairman of the board of Ebasco Services, Inc.; George H. Shaw, of the law firm of Lee, Shaw and McCreery; Ben O. Howard, aviation consultant to Atlas and other firms; Richard C. Patterson, jr., chairman of the board of Ogden Corp.; William C. Rockefeller, general manager of Alvin P. Adams and Associates; Emmett A. McCabe, Atlas executive.

In another change, H. A. Bruno & Associates, took over Convair public relations from Hill and Knowlton, Inc. The Bruno firm has long represented Atlas Corp.

AIA Plane Directory Lists 49 Models

Forty-nine different models of aircraft, including four helicopters, "currently are being offered on the civil market" by 25 U. S. aircraft manufacturers, according to Aircraft Industries Association. Several of the planes included in AIA's tabulation are not yet in commercial production.

AIA's directory of last year showed 29 companies offering 47 models.

The list this year puts the number of multi-engine models at 17, "including two cargo designs." These are the Boeing Stratofreighter and Fairchild packet, both of which now are being produced only for the Air Force. Among the 17 multi-engine planes is the Consolidated Vultee Model 37, powerplants of which are stated to be "5,000 hp. gas turbines." This is the first indication that Convair might be engaged in development of such a craft, the XC-99—built for the Air Force and now ready for taxi tests—being powered by reciprocating engines.

Included also are the Martin 3-0-3, and the Northrop Pioneer, four Constellation models, three twin-engine Beech models, but not the four-engine Beech Model 34.

SERVICE SET-UP AT MacARTHUR FIELD

First over-all view of the complete Lockheed Aircraft Service establishment at MacArthur Field, Sayville, L. I., N. Y., as it was shown at an LAS "open house" that attracted 3,500 visitors. The recently finished hangar at the extreme right contains 60,000 sq. ft. and will house four four-engine planes at once. At the extreme left is the original hangar, leased from Island Air Ferries. Between the two is the shop building, with the section farthest away from the camera devoted to warehousing and general offices. Foreground are the novel docks LAS had built for work on engines only.

...the world's highest dams

...longest bridges

partners in creating

• As the draftsman's pencil makes its mark, he issues orders, through a remarkable kind of shorthand, to the men who must act on his drawings. But only with special assistance can human hands shape such precise, complex orders as these. No wonder the draftsman chooses his instruments with care . . . he is, in effect, taking them into partnership!

In this sense, Keuffel & Esser Co. drafting equipment and materials have been the draftsman's partners for 80 years in creating the peaceful culture and wartime might of America, in making possible our concrete dams, steel bridges, aluminum bombers.

So universally is this equipment used, it is self-evident that every engineering project of any magnitude has been built with the help of K & E. Could you wish surer guidance than this in the selection of your "drafting partners"?

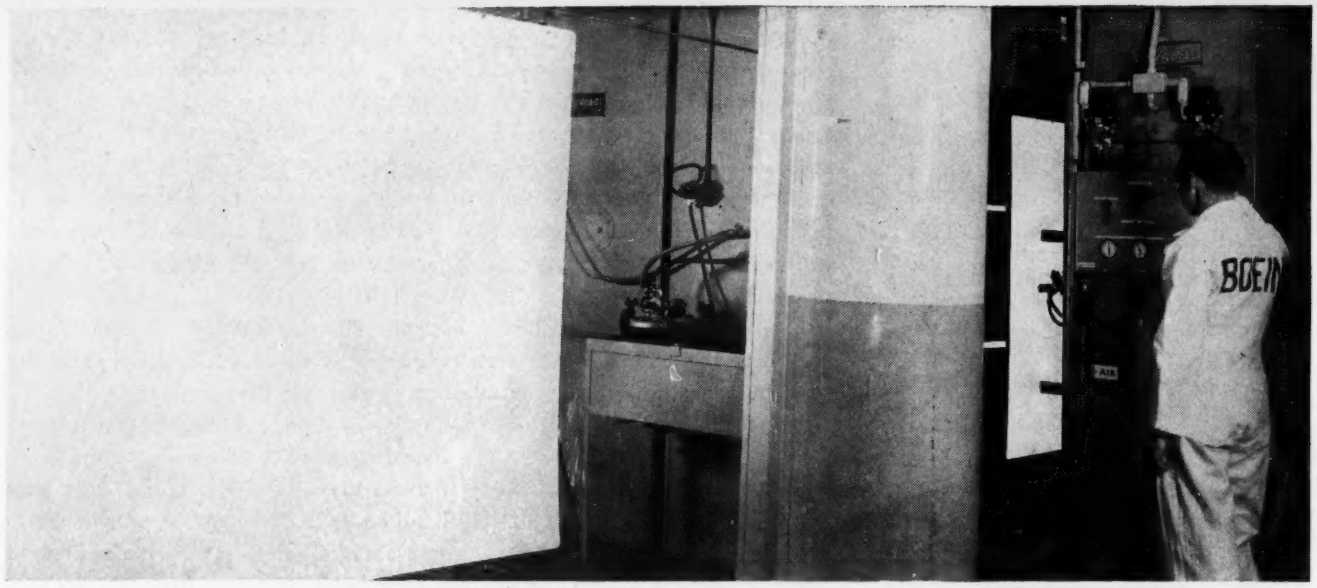
Especially in these hurried days, you will find a PARAGON* Drafting Machine a boon to your work . . . and your nerves! With the finger tips of your left hand on its control ring, the lightest pressure enables you to set the scales at any angle, anywhere on the board. Your right hand is always free. For the full PARAGON* story, write on your letterhead to Keuffel & Esser Co., Hoboken, N. J.

*Reg. U. S. Pat. Off.

K+E

Drafting, Reproduction, Surveying Equipment and Materials. Slide Rules, Measuring Tapes.

KEUFFEL & ESSER CO.
EST. 1867
NEW YORK • HOBOKEN, N. J.
CHICAGO • ST. LOUIS • DETROIT • SAN FRANCISCO
LOS ANGELES • MONTREAL



Heart of improved photo template production system at Boeing's Seattle plant, is automatic sensitizing machine. One sheet, just visible at far right, is in position for sensitizing, while sheet at left has emerged from machine for transfer to the drying conveyor.

New Machine Speeds Templating

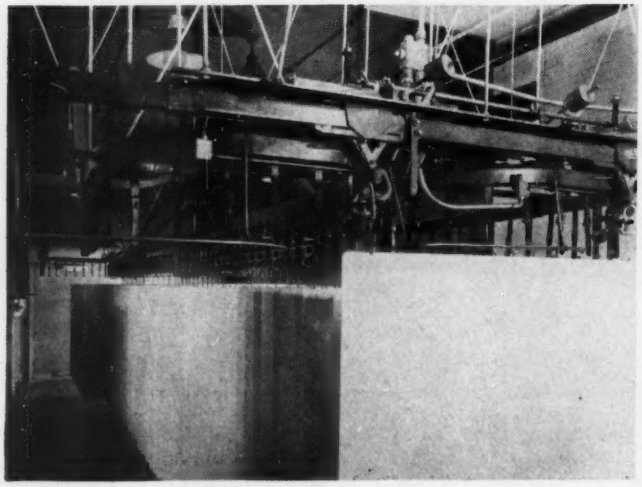
Automatic Sensitizer, Conveyor System Aid Production by Making Templates Available Shortly After Master Drawing Completed.

Installation of new equipment and adoption of new methods by the photo template unit of the Boeing Aircraft Co. in its Seattle, Wash., plant has resulted in a semi-automatic operation that results in greater production with reduced manpower, and delivers finished templates ready for use in production within a few hours after the master drawing has been completed by the engineers.

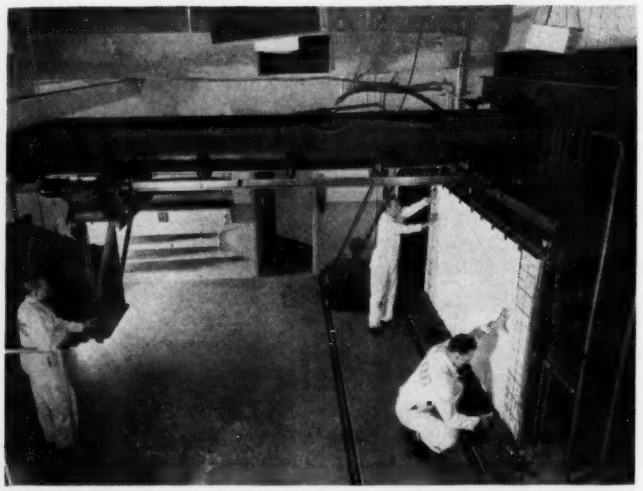
The application of photography in the making of templates was adopted by Boeing before the war and developed under the impetus of wartime necessity. With a greater variety (XB-47, B-50, C-97 and Stratocruiser) and a relatively high level of production since the end of the war, Boeing today uses even more photo templates than during the war, according to K. Pirogoff, Reproduction Unit supervisor.

► **Automatic Sensitizing**—Heart of the new system is an automatic sensitizing machine, first of its kind, adapted especially for Boeing by the DeVilbiss company from a similar automatic machine used for painting manufactured articles. The sheet upon which the templates are photographed, generally aluminum or sheet steel but sometimes plywood, is fed into this machine on an overhead conveyor capable of handling 3,000 sq. ft. of template stock every hour.

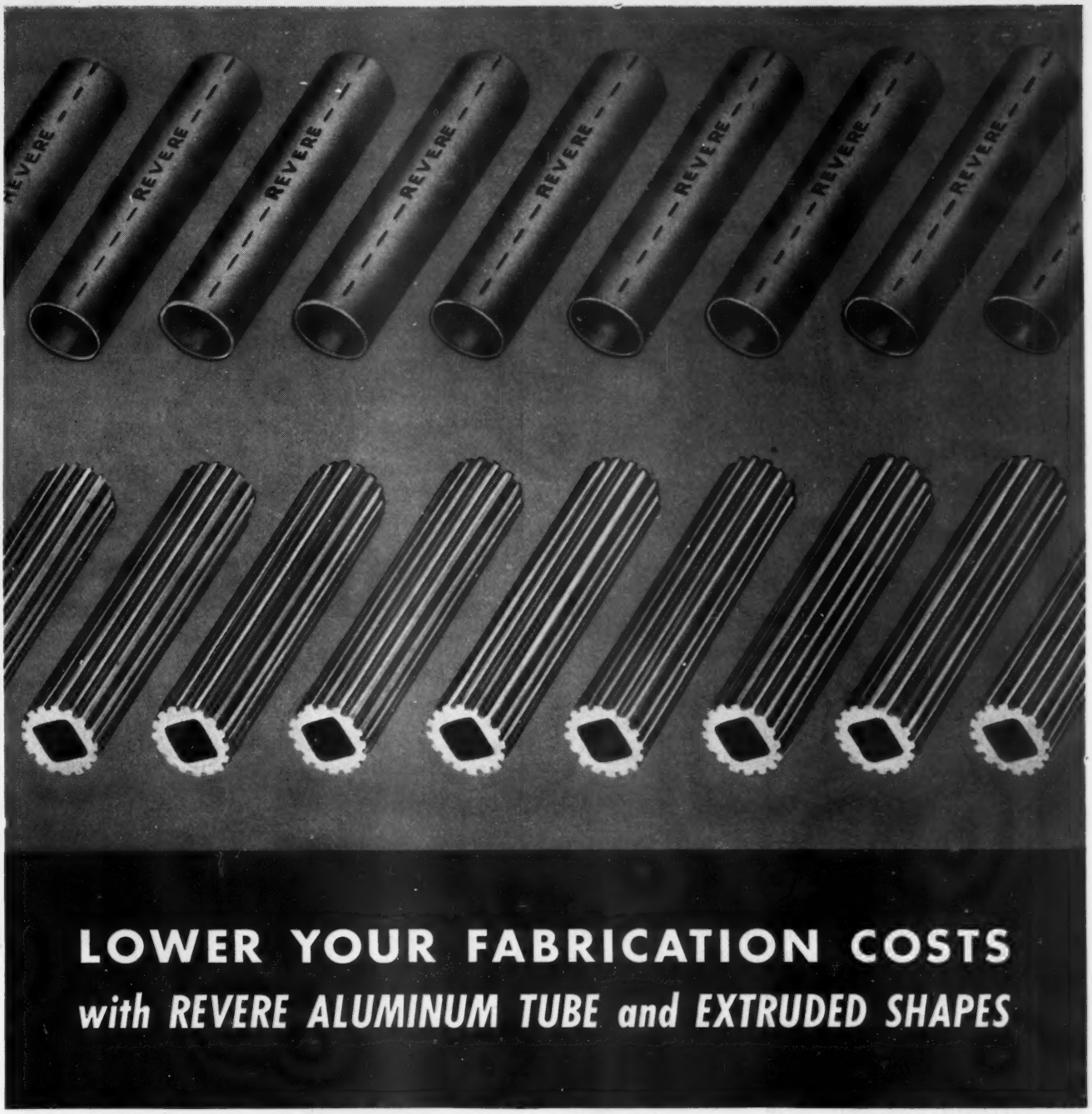
A vertically-moving spray gun, with a pressure of 25 lb., begins to function as soon as the sheet enters the spray chamber. Motion of the gun is synchronized with the speed of the conveyor (12 ft. a min.). A system of valves controlling the flow of Ansco sensitizing emulsion is actuated by solenoids



Sensitized sheets hang in drying room. Sheet in immediate foreground is being transferred automatically from sensitizing conveyor to drying conveyor, while sheets in rear are ready for camera.



Here, sensitized sheet here is being placed on back of vacuum easel of Lanston monotype template camera. Tracks in front of easel are for traveling light used in photographing master drawings.



LOWER YOUR FABRICATION COSTS
with REVERE ALUMINUM TUBE and EXTRUDED SHAPES

THE uniform quality of Revere aluminum alloy tube and extruded shapes is typical of the high standard of quality that has been characteristic of Revere for nearly a century and a half. To users, this uniformity means lower fabrication costs. The greater consistency from shipment to shipment reduces the need for continual adjustment of your fabricating equipment and techniques. Your production flows smoothly; and the result, *according to Revere customers,* is a worthwhile saving in fabricating time and a consequent reduction in costs.

You make further savings as the result of the excellence of the finish on Revere aluminum alloy extruded shapes. *Users report* that they can cut and color to produce a superior finish in less time than is required for the same operations on competitive materials.

Revere produces aluminum alloy tubes in sizes up to about 3½" O.D. and in many wall thicknesses. The alloys available are 2S, 3S, 4S, 24S, 52S and 61S.

Revere aluminum shapes can be extruded from many alloys to your designs. They can help you simplify difficult design problems as well as reduce your fabricating and assembly costs.

The Revere office nearest you will be glad to give you more complete information about Revere aluminum alloy tubes and extruded shapes as well as technical assistance in their application.

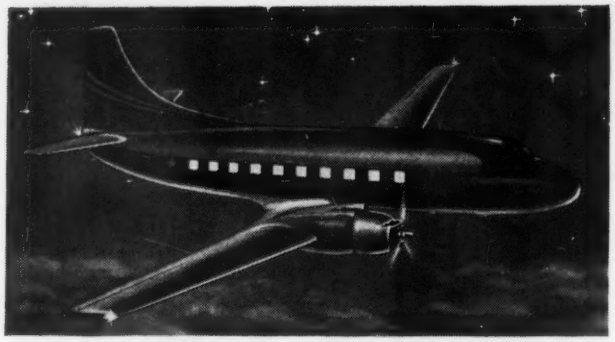
REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; New Bedford, Mass.; Rome, N. Y.—Sales Offices in Principal Cities.

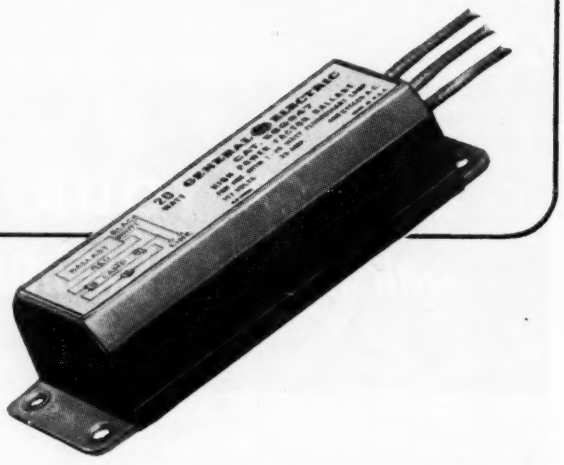


for airborne fluorescent lighting

Modern fluorescent lighting, like that shown above in the famous Martin 2-0-2 transport, adds one more comfort to today's aircraft travel. And G-E ballasts, famous for reliability, are the best way to assure rated lamp life in your fluorescent installations. For general lighting needs in cabins, lounges, and galleys, single- and multiple-lamp ballasts for 15-, 20-, 30-, and 40-watt lamps are recommended. For decorative and special lighting, there are G-E ballasts for the Circline lamp, or the Slimline instant-starting lamps. For cockpit and panel lighting, core-and-coil ballasts afford great savings in space and weight. For complete lighting satisfaction, ask for G-E ballasts in your fluorescent installations.

BALLASTS

...light...
...small...
...reliable



BALLASTS FOR FLUORESCENT LIGHTING are one of six major types of standard aircraft transformers produced by General Electric. Designed for the efficient operation of instruments, panel lights, cabin heaters, and many other applications, these standard 400-cycle transformers are:

Ballasts for fluorescent lighting.
Ignition transformers for cabin heaters, wing de-icers
Ignition transformers for jet engines
General-purpose transformers
General-purpose "flyweight" silicone transformers
Phase-changing transformers

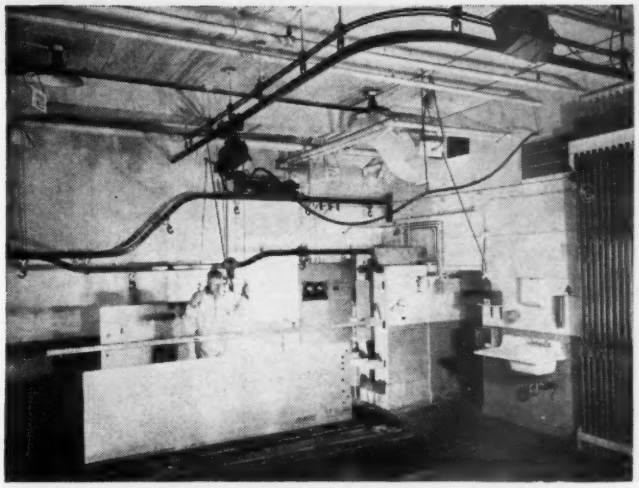
All General Electric aircraft transformers are designed to:

1. Give dependable operation at altitudes up to 50,000 feet.
2. Operate in ambient temperatures from −70 C to 71 C.
3. Tolerate normal frequency variations in power supply.
4. Withstand vibration and shock.
5. Keep weight and size to a minimum.

General Electric facilities and engineering "know-how" are available to help solve your aircraft transformer problems. Contact your nearest G-E sales office, or write *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

411-6



Large photo templates are processed in vertical tanks. Pneumatic hoist is shown lifting sheet from processing tank, while behind worker, sheet on conveyor is ready for rinsing.

Two banks of infra-red lamps dry photo templates as they are carried by on conveyor to final inspection area. Sheet at the right is being transferred automatically to overhead turntable.

coupled with timers set in motion by a tripping device as the sheet enters the machine and closed as the sheet passes the gun, thus reducing over-spraying to a minimum and saving a considerable amount of emulsion. The gun sprays a strip 8 to 10 in. wide on each vertical trip over the sheet, giving a smooth .0005-in. even coating.

Photographic emulsion used in these operations is fed from pressure tanks where temperature is thermostatically maintained at approximately 100 deg. F. for proper spraying consistency. In early operations, the emulsion had a tendency to cloud on the sheet but this was overcome by the addition of a small amount of hydroquinone and by making sure that the painted sheets had been properly dried.

Sensitized sheets are carried out of the spray chamber on a monorail conveyor and shifted by an automatic transfer device to a double track conveyor capable of holding 65 sheets during the hour-long drying period. By the time the drying rack is filled, the sheets at the farther end are dry and ready for the camera. (Sensitized sheets are kept in the dark from the time they are sprayed until they are placed on the camera easel).

▶ **Photographing** – Master drawings, made on .038 steel covered with as many as nine coats of white paint, are photographed on the Lanston Monotype camera especially designed for photo template reproduction. To assure accuracy, the negatives, reduced five times, are made on glass plates.

In making a template, the negative is projected back on the easel, the image carefully "trammed" to scale and the exposure made on the sensitized sheet, usually anodized aluminum. From the camera the exposed sheet goes to the processing room, where developing, fixing and washing takes place in vertical tanks into which the template is lowered by means of a pneumatic hoist.

From the wash tank, the template is transferred to a monorail conveyor which carries it through a final water rinse and a double bank of 144 250-watt infra-red drying lamps. The spray and the lamps are actuated by photo electric cells so that both operations turn on and off automatically as the templates pass along the conveyor. The light cells turn on only those lamps required to cover the particular width (2 to 5 ft.) being dried.

Emerging from the dryer, the quickly-cooling templates are carried by the conveyor to an overhead "turn table", to which they are automatically transferred.

▶ **Drawing on Steel**–Sheet steel used for the master drawing is marked with grid lines, 10 in. apart in each direction, for the convenience of the engineers. With these lines, the engineer is able to use a 12-in. rule in the preparation of his drawing. Marking of the lines is done by a Boeing-patented scriber, which consists of 12 knives mounted on an arm riding on roller bearings along a fixed steel beam. This machine eliminates a laborious hand operation and works with tolerances of .004-in.

The engineers do their drawing with a silver stylus, which can make a sharper line than a pencil, and which can be erased but can't be smeared. The use of silver makes photography of the drawing more difficult, but this has been solved by use of a traveling light giving a minimum of reflection.

Boeing has been making an increasing use of aluminum in templates, finding it easier to handle because of its lightness. One man can easily place a sheet of aluminum on the conveyor line, where sheet steel requires two men. At first the aluminum was painted after being anodized, but later Boeing has found even better results can be achieved by leaving off the paint. The anodized surface gives less flareback, makes possible a sharper line and does not present the chipping problem that a painted surface offers.

A recent Boeing innovation is the use of .003-in. shim stock for changer stickers. Previously, when change was desired on a template, an entirely new sheet had to be prepared. Now, the change is made on "shim stock" which is cemented in place on the old template.

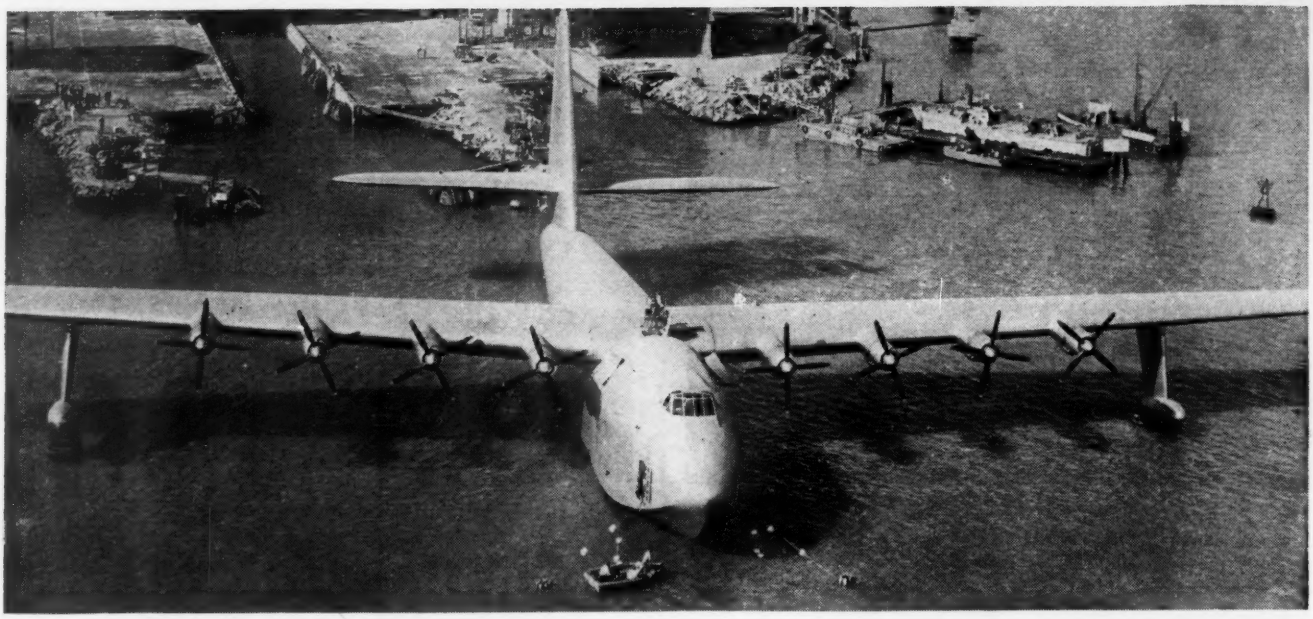
C-W Reports Loss For Nine Months

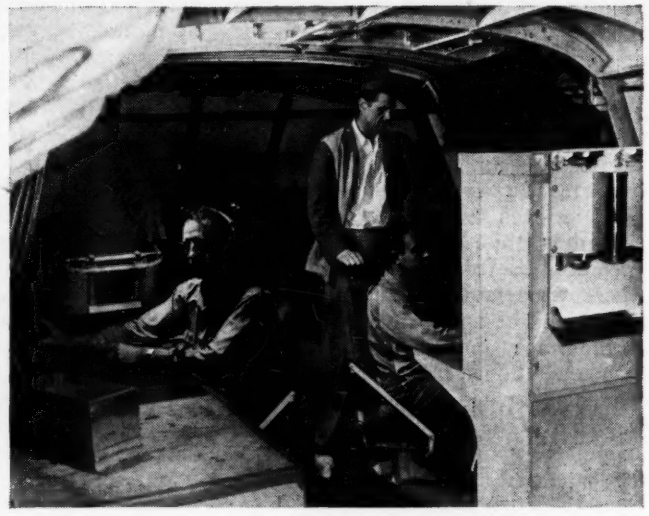
A net loss of $223,478 for the three months ended Sept. 30 has brought Curtiss-Wright Corp.'s nine month loss to $465,315, after adjustments for tax carryback credit and transfer from conversion reserves. For the latest three months, tax credit was $570,000, and transfer from reserves $274,776. For the nine months, tax credits were $5,570,000, and transfers $940,287.

While the parent company was showing these losses on Consolidated sales of $20,141,541 and $58,828,994 for three and nine months respectively, its engine subsidiary, Wright Aeronautical Corp., showed a profit of $243,884 for the three months ended Sept. 30 and $527,632 for the first nine months. Wright sales were $10,267,741 and $36,671,970.

Wright profits were after adding tax carryback credits of $465,000 and $2,210,000, and transfers from reserves of $203,725 and $815,687, for the three and nine months respectively.

C-W's Sept. 30 backlog was at the same level as at June 30, $130,000,000 with $45,700,000 on the latter date being the backlog of Wright Aero.



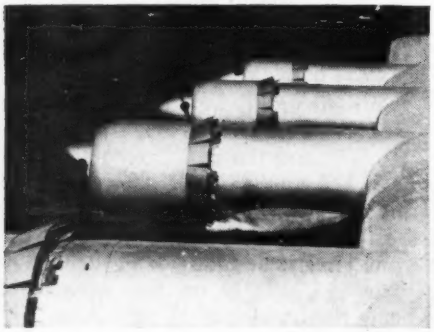


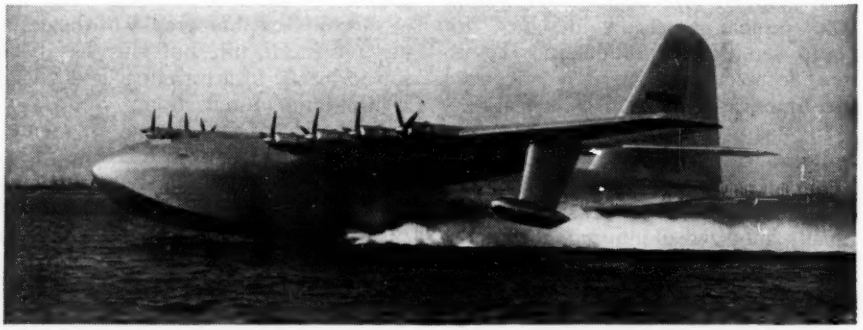
Flying Boat

Largest Craft Undergoes Test Run

The controversial Howard Hughes flying boat is shown at top as it floated from its Terminal Island, Calif. dry-dock prior to taxi tests. Interior of the tail carrier boyant plastic balls for emergency flotation as shown (upper left). Hughes and his navigator and flight engineer are pictured (upper right) on the spacious flight deck of the craft, checking instruments prior to take-off on the taxi run. The taxi run itself (below) developed into an actual flight test. A few moments after the bottom photo was taken, the gigantic craft left the water and skimmed over Los Angeles harbor, airborne for more than a minute.

The plane took off at 80 mph. at a weight of 276,000 lb., more than half of its designed gross of more than 400,000 lb. The quantity of test equipment that generally fills a smaller aircraft being given its test runs is dwarfed by the huge size of the Hughes boat, leaving plenty of room for a number of airline-type observers seats in the forward portion of the hull aft of the flight deck. (Top photo INS, bottom photo A. U. Schmidt)





FASHION QUIZ: ...will pants be worn?

Ever argue the relative merits of fixed versus retractable landing gear? Or "air-cooled" versus "liquid-cooled" engines? Who hasn't!

One way to switch an argument into an *agreement* is to bring up the subject of the popular Skyway Service offered by Standard Airport Dealers.

Standard Airport Dealers offer a full line of top-quality aviation fuels and lubricants and other flight necessities.

Another swell feature of Standard Skyway Service is convenience. It's available now at hundreds of airports right on your line of flight anywhere in the Midwest.

Standard Skyway Service—
Everywhere in the Midwest

STANDARD

Standard Aviation Gasolines
Standard Aviation Lubricants and Hydraulic Oils
Quaker State Aero Engine Oils
Atlas Aircraft Tires, Batteries and Accessories

STANDARD OIL COMPANY (INDIANA)

Project Squid Probes Pulsejet

Five Eastern Universities Hold Navy Research Contracts

By Robert McLarren

Because of considerations of simplicity, lightweight, dependability, and cheapness, the Navy Department is pressing fundamental research on the pulsejet engine in a project known as "Squid," a particularly apt sobriquet. The project comprises a series of research contracts let by the Office of Naval Research in July, 1946 to five East Coast universities—Princeton, Cornell, New York University, Purdue, and Brooklyn Polytechnic Institute.

Contracts are for a two-year period and aggregate about $2,000,000. They are administered by a joint policy committee headed by Dr. Hugh Stott Taylor, Dean of Princeton's Graduate School. Technical cognizance is under the direction of the Bureau of Aeronautics, and Lt. Comdr. C. C. Hoffman, head of the Research Section, Power Plant Division of the Bureau is technical project officer.

▶ **Five Fields**—Research is divided roughly into five major fields—combustion, materials, diffusers and valves, fuels, and aerodynamics. Each of these is further broken down into detail areas of investigation. Because of the integral nature of these studies, each of the universities is responsible for from two to five of these fields.

Actually, through a peculiar administrative complexity, Project Squid encompasses both liquid rocket and pulsejet research, and the research contracts include both problems. While it is apparent that these two types of propulsion have little in common, they were assigned for exploration to the Bureau of Ordnance during 1945 as an exclusive province, with such other forms as turbojet and ramjet being assigned to BuAer.

Last year both liquid rockets and pulsejets were transferred to BuAer as research fields and were combined into a single project.

▶ **Engine of Many Names**—The pulsejet engine (formerly "resojet," "intermittent ramjet," "buzz bomb engine," aeroresonator," etc.) consists, essentially, of a properly shaped tube with a fuel supply and one-way check valves at one end. Air is introduced through the valves, mixed with the fuel and burned, the resulting explosion closing the one-way valves in the forward end and exhausting the gases at the rear end, resulting in a net thrust forward. Ram pressure re-opens the check valves after the explosion has reduced the pressure within the engine and the cycle is repeated. This creates the unique pulsations of the engine, from which it derives its many names.

Like all recent aeronautical developments, the pulsejet engine is not new, its earliest form appearing in 1908, slightly more than four years after the Wright Brothers' first flight. This pioneer pulsejet engine was the work of Karavodine and was designed to operate a turbine, the open end of the pipe being directed against the turbine blades. It operated very inefficiently, delivering 2 hp. from a consumption of 22 lb. of benzene per hour. A similar device was developed in France by Marconnet in 1909.

Father of the modern pulsejet engine was Paul Schmidt, a German consulting engineer, who conceived the possibilities of the device as a prime mover. He began work on the system in 1928 and on April 25, 1931 obtained German patent No. 523655 for such a device. From 1931 through 1935 Schmidt supported his experimental work out of his own pocket but in the latter year he attracted the interest of the German Air Ministry and in 1942 he completed his work and handed over the design to Argus Motoren G.m.b.H. in Berlin for production. Application of the Schmidt engine to the German V-1 followed.

▶ **U. S. Development**—It is interesting to reveal just how close the U. S. came to perfecting a pulsejet engine independently during the war. Dr. Fritz Zwicky of Aerojet Engineering Corp., began experiments with an "aeropulse" device during 1943, his group was immediately supported by BuAer, and considerable research work was instigated early in 1944. At the same time, Lt. W. Schubert, U. S. Naval Engineering Experiment Station, Annapolis, Md., designed and built an aeropulse engine and operated it successfully, the first to be built and run in this country. His engine, however, was valveless and operated on acoustical principles rather than the simple mechanical principles of the pulsejet engine. After the debut of the V-1s, innumerable projects, both military and private, got under way in this country.

Advantages of the pulsejet engine are numerous. It is—

- **Simple.** It comprises only a properly shaped tube, a fuel supply and a valve grid, and it does not require special heat-resistant alloys or expensive machined parts.
- **Dependable.** Control of the engine is obtained through the fuel meter, and no complex governors, injectors, or carburetors are required. A simple ignition system is used for starting.
- **Light.** It weighs only a fraction of the dry weight of a reciprocating or turbine engine.
- **Flexible.** It can be operated on practically any liquid hydrocarbon and is substantially insensitive to variations in operating conditions.

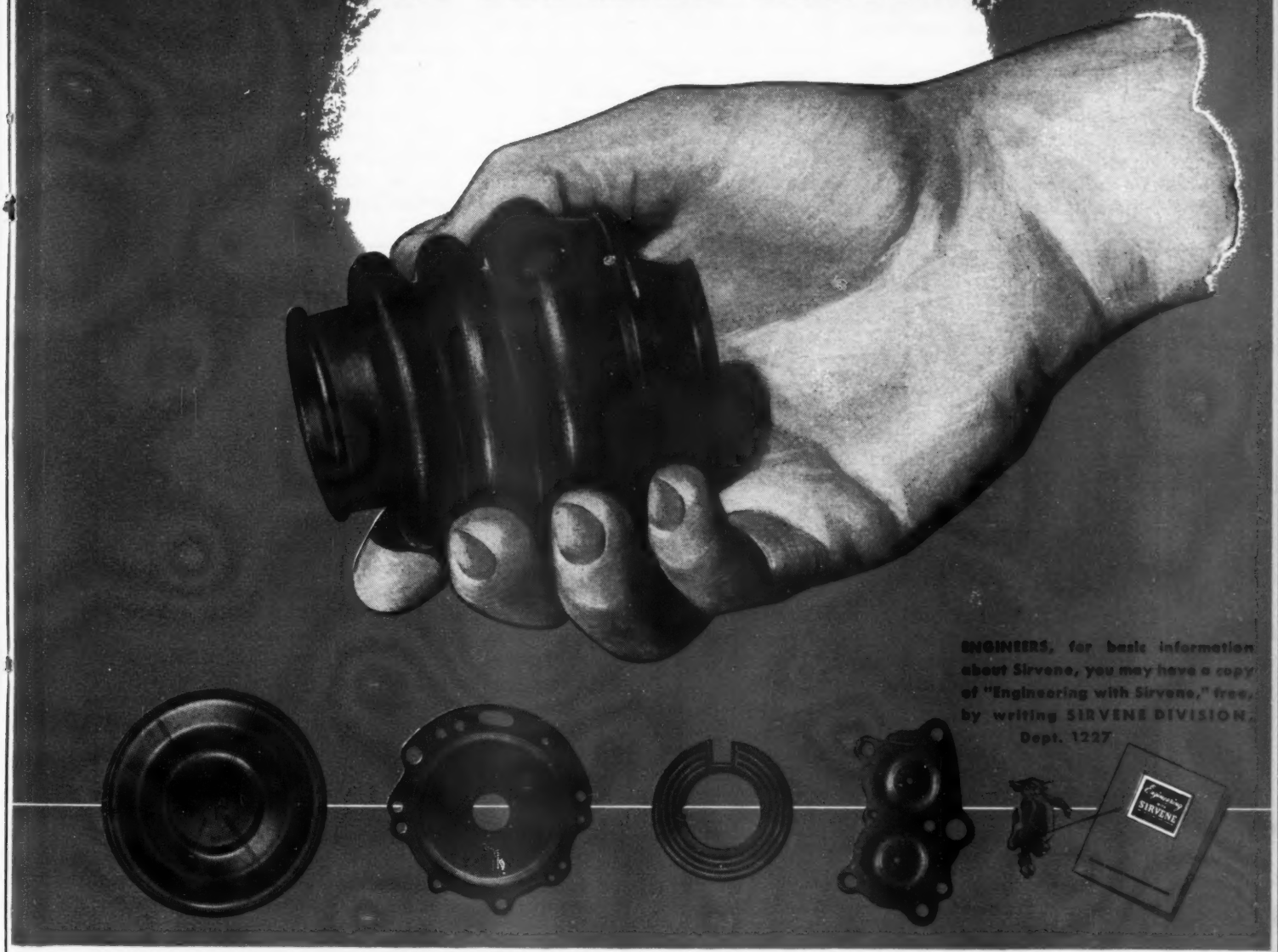
Accompanying these advantages are a number of disadvantages, which, for many applications, outweigh the former. It is—

- **Costly.** Fuel consumption of the pulsejet lies just below that of the ramjet engine but well above the turbojet's.
- **Noisy.** Using an explosion cycle, the pulsejet engine issues an ear-splitting "stutter."
- **Short-lived.** Because of the frequency and severity of their operation, the life of the check valve units is comparatively short.

Consideration of all these features indicates a sphere of usefulness of the pulsejet engine almost exclusively in the pilotless aircraft, and here it shows extremely good promise. Because pilotless aircraft are expendable, the short life of the valve elements ¾ hr. on the V-1) is not an objection. High fuel consumption is compensated in pilotless craft by comparatively short durations. Noise, although affording warning to the target, is not a significant consideration, because of lack of pilot or passengers.

▶ **Pulsejet Problems**—There are a number of problems posed by the pulsejet engine, some of them unique and complex. First in importance is the near-complete lack of theory of the system, because it is an intermittent flow device with accompanying non-linear oscillation problems. Another contributing factor is the creation of shock waves in the tube, introducing the whole unexplored field of supersonics into the problem. With no theory as a guide, pulsejet research has been forced to follow an erratic empirical course with accompanying delays.

SIRVENE CONFIRMS WHAT THE MIND CONCEIVES



ENGINEERS, for basic information about Sirvene, you may have a copy of "Engineering with Sirvene," free, by writing SIRVENE DIVISION, Dept. 1227

Time and again Sirvene engineers serve as the hands which confirm a designer's conception. Working in Chicago Rawhide laboratories, they develop and produce the pliable parts essential to the function of his design. These unusual Sirvene parts are molded from custom-compounded formulae and verify every specification in design, elasticity or hardness, tensile strength or resilience. They are resistant to age, dryness, abrasion, wear, temperature extremes, oil, water and deterioration. When your problem involves the development of pliable parts, Sirvene offers the best solution

SIRVENE

THE SCIENTIFIC COMPOUNDED ELASTOMER

A Product of the Synthetic Rubber Division

CHICAGO RAWHIDE MANUFACTURING CO.

1305 Elston Avenue Chicago 22, Illinois

Sirvene products include diaphragms, boots, gaskets, oil seals, washers, packings, and other special molded mechanical pliables.

Sirvene Engineers are pioneers in the field of scientific compounded elastomers. Since 1929, they have acquired an unequalled background of research, development and manufacturing experience. This unique reservoir of experience is always at your service.

New York • Philadelphia • Detroit • Los Angeles
Cleveland • Boston • Pittsburgh • San Francisco
Cincinnati • Portland • Syracuse • Peoria

Contrary to the oversimplified explanation of a pulsejet engine (air is drawn in the intake and exhausted from the tailpipe), there is a "back-flow" phenomenon manifested by a flow of air into the tailpipe following each cycle. High velocity of the escaping gases through the tailpipe (over 1,000 mph.) expands these gases to about 5 lb./sq. in. below atmospheric pressure, creating a partial vacuum in the tube.

While this low pressure opens the valves and permits a fresh charge of air to enter the nose intake, it also permits the exhaust gases suddenly to change direction and flow back into the tailpipe. At low forward speeds about as much air enters through the tailpipe as enters through the nose intake. This phenomenon robs the pulsejet engine of from 20 to 40 percent of its maximum thrust at speeds of 300-400 mph.

► **Progress Report**—Extremely rapid progress has been made in Project Squid, indicating a significant future for the pulsejet. Thus, effective valve life has been increased from about ¾ hr. on the original V-1 to more than 7 hr.; specific fuel consumption has been decreased from 4 lb./hr./lb. of thrust to only 2.6 lb./hr./lb.; thrust per unit cross-sectional area is up from 250 lb./sq. ft. to 570 lb./sq. ft.; and thrust increase resulting solely from valve redesign is up from 57 to 75 percent.

The 150 engineers and scientists at work on Project Squid view these encouraging results as an indication of the future potential of the pulsejet engine, which, they insist, is still in a crude, undeveloped state. Targets for Squid already have been fairly accurately set—an increase in thust per cross-sectional area from 750 lb./sq. ft. to 800 or 900 lb./sq. ft.; an increase in pressure ratio from 2-2.5 to 4-5; an increase in overall air/fuel ratio from 25-35 to 50-60; and a decrease in fuel consumption from 2.6 lb./hr./lb. to 1.5-1.6 lb./hr./lb.

These increases will be made possible, in the opinion of Squid technicians, by progress in air-intake valve design; combustion research; and more knowledge of tailpipe phenomena.

Methyl Bromide as Fire Extinguisher

By SCHOLER BANGS

Britain's enthusiasm over methyl bromide as a smothering agent in pressure fire extinguisher systems might appear to be arousing U. S. interest in that Northrop's YB-49 jet wing bomber has been equipped with a complete methyl bromide system.

Lockheed's Constitution likewise carries a methyl bromide system; and prior installations had been made by Northrop in the P-61 Black Widow, and by Martin in its JRM Mars.

Yet, despite interest that will be occasioned by use of methyl bromide in the YB-49, experts in the field of aircraft fire extinguishing in this country doubt strongly that there will be any immediate departure from U. S. emphasis of carbon dioxide (CO-2) systems, especially in commercial aircraft.

► **Too Toxic**—They reason that toxicity of methyl bromide, and resultant extreme care required in its handling, will preclude any "trend" toward its general use, even though spectacular savings in weight are involved in methyl bromide systems in large planes such as the YB-49, Constitution, and Mars.

Weight comparisons between the two systems vary with the size of the airplane and range from estimates of 40 percent saving in weight for a big plane methyl bromide system, as compared with a CO-2 installation, to 15-20% weight saving for a DC-3.

While specific weight gains by use of methyl bromide vary in engineering estimates, Northrop believes that a saving of at least 2,000 lb. has been accomplished by designing a methyl bromide extinguisher system for the YB-49.

The company estimates that 33 percent more CO-2 would have been required to do the work of 188 lb. of methyl bromide carried in the system, or 244 lb. of Co-2.

► **Saving Weight**—The major weight saving lies in the fact that the methyl bromide unit is a low-pressure system, the flow induced by a head of nitrogen carried in the extinguishing agent container, and comparatively lightweight plumbing is required. Also, CO-2 containers are extremely heavy in comparison with the eight stainless steel spheres used in the YB-49 methyl bromide installation.

Main flow tubes for a CO-2 system must be of heavy-wall steel and range up to 2½ in. internal diameter, as in the case of a very complex 8,000 lb. CO-2 system developed experimentally for the first XB-35 wing bomber. In the YB-49 extinguisher system the largest stainless steel piping used measures 1-in. internal diameter with an .049 in. wall thickness.

The weight penalty involved in the first XB-35 system doubtless influenced Northrop's interest in methyl bromide, and subsequent units of the XB-35 were equipped with installations for the latter, provided by American-La France Corp. The latest installation, in the YB-49, was produced for Northrop by Walter Kidde & Co.

► **No Interest**—Despite weight economy, and standardization of methyl bromide by Britain's Graviner Co., American fire extinguisher companies have had no success to date in interesting U. S. commercial aircraft builders, or airlines, in its use.

Chief reason for this seems to be the health hazards involved, and limitation of its use to engine areas, and with such safeguards that methyl bromide fumes cannot enter areas occupied either by passengers or crew. This would dictate the use of containers and piping in wing and nacelle areas having limited access as compared with the easy-to-reach installation of CO-2 bottles in the nose wheel well of the DC-6.

► **Precautions**—There exists considerable dispute in the extent of precautions that should be exercised in handling the poisonous chemical whose ill effects are often delayed as much as two months after exposure.

Wright Field, in its specification No. 40950, dictates that methyl bromide containers be marked "Poison."

There does exist, though, a general agreement upon toxic qualities in the chemical, and potential danger in that a workman might be unaware of exposure to a gas leak in hazardous quantity.

Northrop engineers, while recognizing the hazards of the smothering agent, do not seem to feel that it will offer any serious problem of handling or maintenance of the extinguisher system. For one thing, discharge of the system will be isolated to the YB-49's eight engine wells, which in themselves are far removed from the flight crew's pressure-sealed cabin. Also, the system's pressure gauges are such that immediate warning of a leak is provided, and in that event the engine areas can be cleared of workers until the leak is corrected.

GOOD BEARINGS

bear the BOWER trade mark

symbol of the ultimate

in bearing design

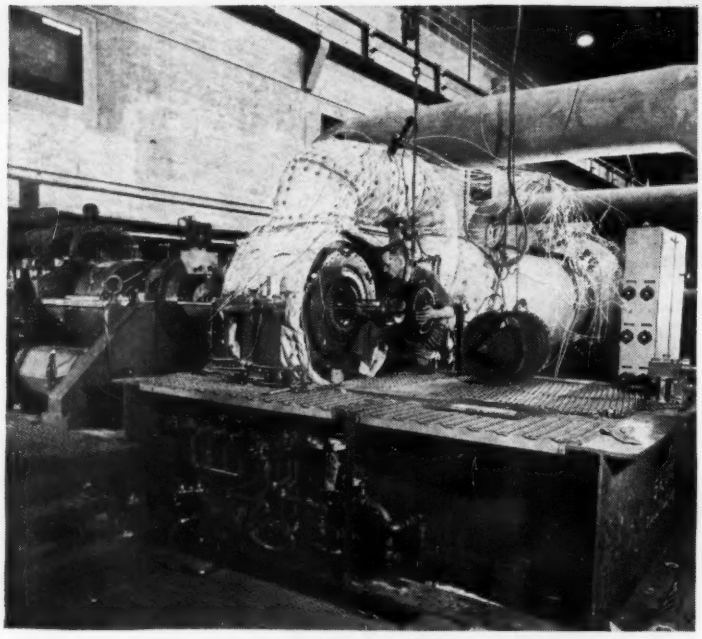
What's behind this trademark? Why is it so important to everyone who uses bearings? The Bower trademark is important to you because it means better bearing performance for your product. It shows the important design advantages that make Bower Roller Bearings the most advanced in their field . . . the larger oil groove that assures positive lubrication, the higher flange surface that means better roll alignment—smoother performance, and the spherical roll-ends and flange surfaces that fit exactly to reduce bearing wear—lengthen bearing life. That's what's behind the Bower trademark for you. That's why every bearing that you buy under the Bower trademark is a *good bearing.*

BOWER ROLLER BEARING COMPANY • DETROIT 14, MICHIGAN

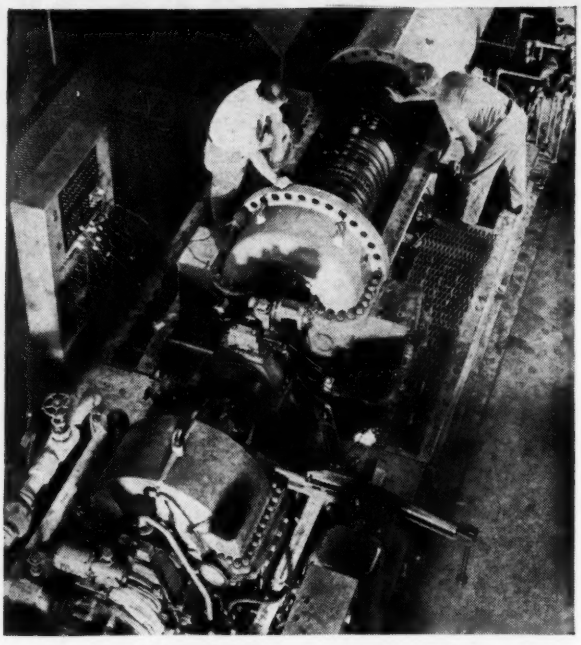
For more complete information, write for the new Bower engineering catalog.

BOWER

ROLLER BEARINGS



TURBINE TEST AREA contains two compressors (not seen) and single combustion chamber (right of turbine) which can be connected to supply hot gas to test turbine. Output is measured by water brake (left).



COMPRESSOR SETUP: Dynamometer turbine in foreground drives test compressor. Bulkhead at left is terminus for permanent test leads to segregated control room.

Unique Laboratory Speeds Jet Engine D

Complete and flexible test facilities for turbojet components are valuable guide f

Today—little more than 30 mo. after a cold start—Westinghouse engineers work to capacity a $5,000,000 aviation gas-turbine development laboratory unequaled by any other private facility.

This continuous probing into the characteristics of power plant components yields the design know-how needed to meet the demand for ever better military engines and brings nearer the commercial utilization of aircraft gas turbines.

The job of designing and building for the Navy a completely American jet engine, begun the day after Pearl Harbor, was completed successfully without recourse to research and development facilities other than those Westinghouse had when war began. But late in '43 it became evident that larger facilities were essential to successful realization of the potentials of the gas-turbine power plant. Thus, under Bureau of Aeronautics sponsorship, Westinghouse agreed to design, erect, equip, and operate a component development laboratory.

Why the emphasis on component testing? Unlike the reciprocating engine, the gas-turbine plant consists of several major units such as compressor, combustor, and turbine. Net output is the difference between turbine and compressor power, and hence is extremely sensitive to efficiency and performance of each. Analysis of a complete plant is difficult because of the effects each unit has on the others, and because of the necessarily compact layout. Thus, development testing of individual components proves the only economical solution.

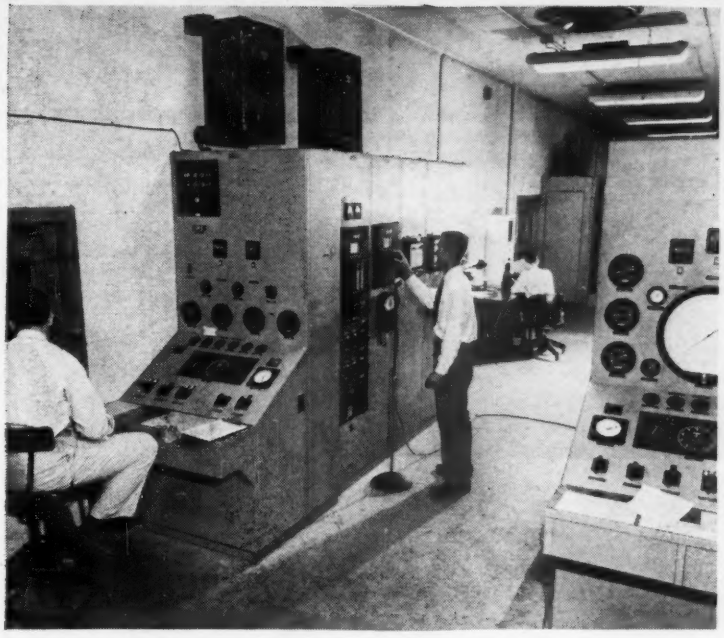
In addition to turbine, compressor, and combustor, the power plant comprises lubrication, control and heat-transfer apparatus, plus starters, generators, and ignition equipment. Separate investigation of the secondary components—the accessories—involves no special problems but testing of turbines, compressors, and combustors requires heavy power and heat inputs and dissipations. With due consideration for these factors, the laboratory was built to handle full-scale tests for power plants of up to 4,000 hp. net output. This does not represent a judgment of engine-size limits but typifies a balance between a setup large enough to minimize scale errors and reasonable expenditure of materials and manpower to achieve results.

Availability of steam from a powerhouse built in 1940 for a war-expanded marine-propulsion-equipment shop dictated both location of the lab and type of drive. As built, the lab comprises four major test facilities: (1) High-power turbine, (2) high-power compressor, (3) low-power model and variable-pressure combustion, and (4) engine accessory, lubrication, and mechanical development testing.

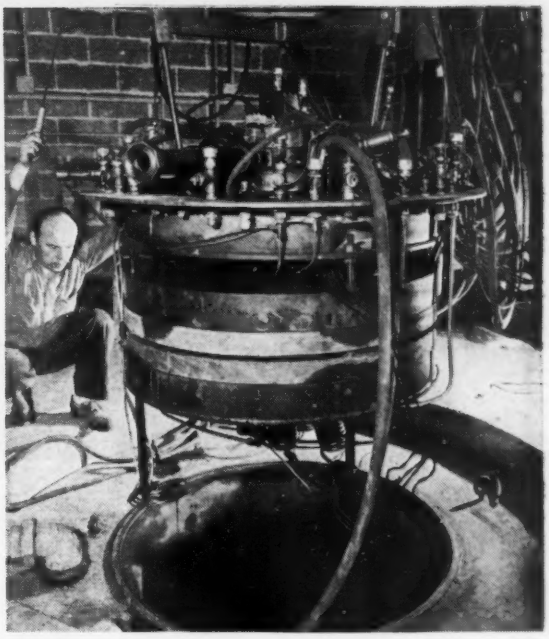
High-power test areas are side-by-side. For turbine testing, two multi-stage axial-flow wide-speed-range steam-turbine-driven compressors can be operated individually or in series with intercooling to supply up to 58 lb./sec. of air at pressures up to 118 psia. A combustor, capable of releasing up to 85,000,000 Btu./hr., heats this air to provide gas to operate the turbine at pressures up to 8 atmospheres and 1800 deg. F. Turbine output, which may reach 18,000 hp. at 15,000 rpm., is absorbed by specially designed water brakes.

Compressors to be tested are driven by a controlled-torque wide-speed-range cradle-mounted steam turbine, which gives direct measurement of power input. Operation in a closed circuit, including streamlined grid valve, shell-and-finned-tube cooler, and an 8-position pneumatically operated variable-area orifice, gives maximum flexibility with respect to flows and pressures. The system can handle up to 6,000 hp. at 20,000 rpm., with discharge pressures up to 150 psi. and inlet pressures to 90.

In both high-power test areas, piping and service equipment is generally be-



CONTROL ROOM provides quiet, protected area for test engineers, who can view operations through shatterproof windows, communicate with test area by public-address system, control operations remotely.



HOT-SPIN TEST PIT evaluates high-temperature properties of disk and blade alloys. Full instrumentation records results. Pit is heavily armored for destruction tests.

e Development

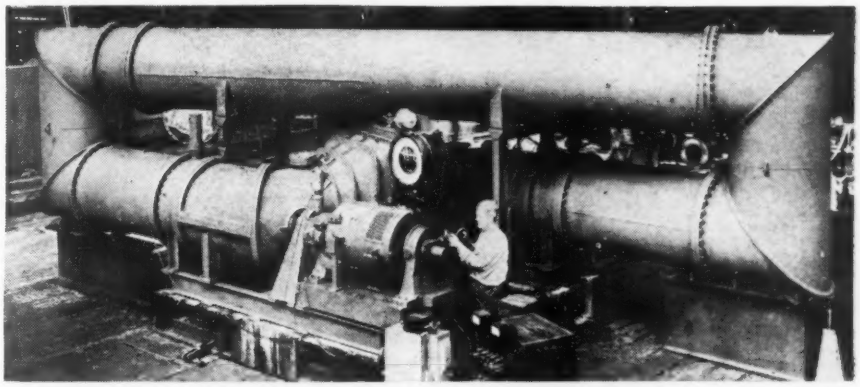
guide for future designs.

low working floor level, and special ventilation confines need for explosion-proof motors and controls to underfloor areas.

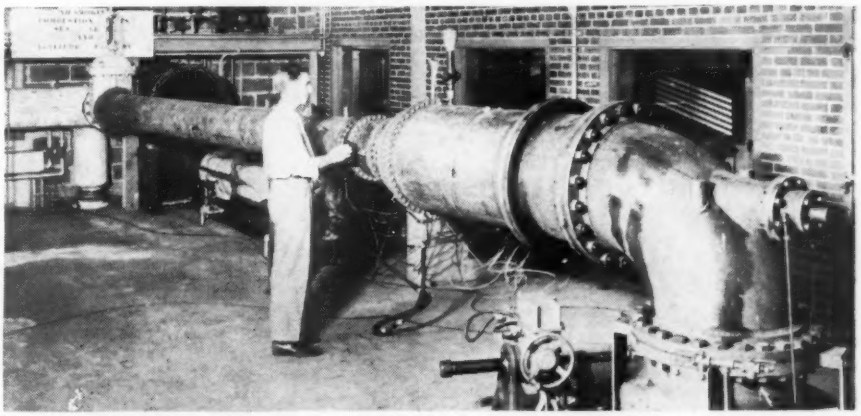
In the combustion lab, three setups are available: (1) Blower-powered atmospheric-pressure tests, (2) elevated-pressure tests using compressed air from the high-power turbine-test area, and (3) altitude testing, using main compression plant in conjunction with a shell-and-tube cooler.

In the engine accessories, lubrication, and mechanical development areas, individual projects on control, apparatus, fuel and oil pumps, starters, ignition equipment, and bearings, etc., are assembled on bedplates equipped with dynamometers and auxiliary drives ranging from 2.5 to 125 hp. Twelve of these test locations adjoin built-in stations of the lab distribution systems for several voltages, water, compressed air, vacuum, and fuels.

To minimize explosion and fire hazard, three of the accessory bedplates, supplied with gasoline, are installed in a room entirely equipped with explosion-proof fittings and services. Opening into the hazardous accessory test area is an altitude chamber where an entire complement of engine accessories can be operated over a complete range of atmospheric conditions to 70,000 ft.



MODEL TESTER, highly flexible, permits economical screening of large number of experimental designs. Symmetrical about center of shell-and-finned-tube cooler, it contains all functional elements of high-capacity compressor-test setup. The model tester, wholly separate unit, is entirely above floor level in room adjacent to high-power plant, and within service area of two-ton crane.



COMBUSTION LAB contains two test stands like one shown. Control room beyond wall at right is equipped for simultaneous and independent operation of stands with any combustion of pressurized, atmospheric, or altitude conditions to about 45,000 ft. In elbow at right is eyepiece for combustion inspection during operation.

SUCCESS TO YOU AND YOUR NEW

CESSNA 195!

Bubbling over with high hopes and enthusiasm? Planning to have yourself a wonderful time with that grand new, brand new little Cessna? Well, brother, when you come down to earth . . . anywhere in the big, wide Middle West . . . look for the orange and black shield with wings on it. That's right! That's the Phillips 66 sign . . . the sign of fine aviation products!

At big city airports, and at numerous small landing fields from the Dakotas to Texas, just taxi up to the Phillips pump and toast your new love in Phillips 66 Aviation Gasoline. It's a pledge to happy days . . . and clean, sweet engine performance!

May we add, also, that Phillips fuels some of the most important airlines that serve the mid-west territory. The Aviation Department, Phillips Petroleum Company, Bartlesville, Oklahoma.

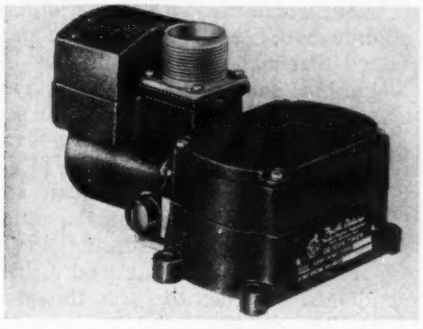
Phillips 66

AVIATION GASOLINE

NEW AVIATION PRODUCTS

Aircraft Sequence Timer

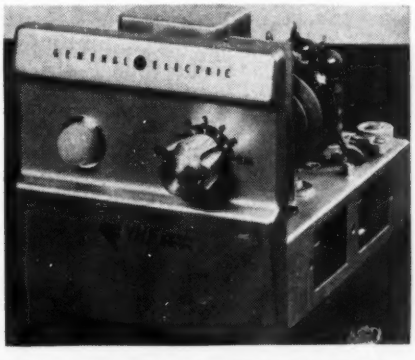
New, simplified electrical sequence timer, announced by **Pacific Div., Bendix Aviation Corp.**, North Hollywood, Calif., is designed to provide positive, instantaneous switching, eliminating



objectionable load fluctuations. As propeller de-icer timer, unit is stated to make up to 10 percent more heat available from given maximum generator load by eliminating off period required by conventional timers. Instantaneous switching action, accomplished faster than circuit relays can be closed, is positively controlled by mechanical cam, and there are no adjustments. One model provides eight 15-sec. periods; and other, eight 13⅛-sec. periods. Wide variety of other combinations are also available. Weight is 2 lb. 3 oz.

Personal-Plane VHF Transmitter

New VHF private craft transmitter, Type AT-3A, is designed for use with any suitable aircraft receiver as means of communicating with tower and radio range stations. Developed by **General Electric Co. Electronics Dept., Transmitter Div.**, Syracuse, N. Y., device weighs but 2 lb., 9 oz. and functions on



any of the six VHF radio channels for nonscheduled aircraft. Operating from 12v. airplane battery with a power output of 1w., percent modulation is 100 percent and emission A3 (voice amplitude modulated).

Polar Recorder

Commercial availability of polar recorder is announced by **Airborne Instrument Laboratory**, Inc., 160 Old Country Road, Mineola, L. I., N. Y. Originally designed to plot aircraft antenna radiation patterns, instrument charts voltage on either linear or logarithmic scale as radial distance against angular position. Designated as A.I.L. Type 116, device is custom built to specific requirements, and fea-

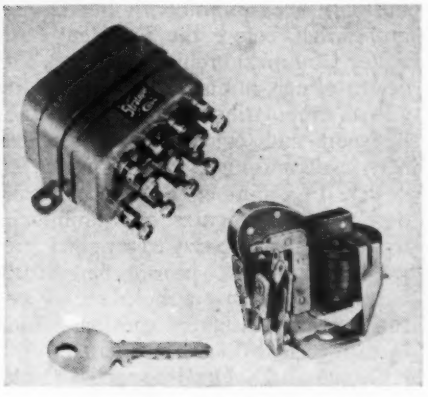
tures permanent ink record, rapid writing speed coupled with low pen overshoot, and precision of angular positioning. Unit appears adaptable to any measurement task recordable in terms of polar coordinates, and can be provided in either portable or rack mounting form.

Speeds Runway-Joint Sealing

Improved equipment for melting and pouring permanent seals in airfield runway joints is announced by **United States Rubber Co.**, 1230 6th Ave., N. Y. C. 20, for use with company's "Sealz" compound. For compactness and ease of operation with rapid melting cycles, melter is of double boiler type, one chamber within other. Oil automatically controlled at 450 deg. F. circulates in outer chamber, preventing overheating and damaging of compound, which is loaded into inner chamber, holding three 50-lb. units of material. Melter operates on continuous cycle, 50 lb. being added and withdrawn every 12 min., with none of compound exposed to melting temperature longer than 36 min. Oil bath can be brought up to temperature in 1½ hr. and first three bags of compound can be melted in about ½ hr. Whole 50-lb slabs can be accommodated without cutting. Heat is supplied by burning gas from pressure cylinders. Hand pouring pot is available to permit unskilled worker to pour neat joint. Melter weight is 1,150 lb., measuring about 3½ ft. in length and height and 27 in. wide.

Aircraft Miniature Relay

New tiny 400c. relay known as Hy-G, and made by **Cook Electric Co.**, Chicago 14, Ill. is designed for stable performance under accelerations as high as 30 Gs. Relay measures 1½ × 1¾ × 2⅜ in., weight is but 3½ oz. with standard mounting. Magnetic circuit is fully laminated and sharp rise in force occurs just before armature seals in. Heat developed in shading coil is conducted over copper bars to radiating fins, and heavy-duty bearing pin promotes long life cycleage. Coil is impregnated with silicone compound for protection against high humidity and tropic conditions. Spring assembly pile-ups on each side of actuating bars are constructed to give balanced armature pressure. Device is also available



for aircraft use in 10½-oz. "Stratopax" form (surrounded in hermetically sealed container by inert gas under pressure) measuring 2¼ × 2¾ × 3 in., and exclusion of moisture, dust, and oxygen gives more consistent performance and longer life. In photo, key shows size comparison.

Automatic Flight Timer

Designed for private owners, flying clubs, schools and charter service, flight timer, weighing less than 1 lb., totals air hours and minutes up to 10,000 hr. Known as Logdometer, and made by **Aero Instrument Corp.**, 1780 S. State, Ann Arbor, Mich., unit starts operating, via impact pressure, at takeoff or engine run-up. Large luminous sweep hand provides accurate time check for cross country pilots. Stated as being quickly installed, device fits 2¼-in. standard instrument hole and is equipped with AN fittings, screws, 30 in. of hose, and pitot tube.

FINANCIAL

Aircraft Dividends Run Counter To General Corporate Tendency

Difficult year characterized by curtailed cash disbursements to stockholders; Grumman outstanding exception with anticipated increase.

Aircraft companies are significantly absent from the daily lists showing extra and increased dividend payments being made by American corporations. The aircraft builders, on the whole, have been conspicuous by their reduced or omitted dividend disbursements.

The current year has been a very difficult period for the aircraft industry with most companies reporting large deficits. Losses would have been even greater were it not for the carry-back tax credits. The reasons for this showing are familiar and have been prominently highlighted in hearings before the President's Air Policy Commission and elsewhere. The dearth of new military business and the virtual evaporation of the commercial transport and lightplane markets has been a depressing influence on the industry. In a number of instances, heavy development expenses on commercial transports have exceeded original projections and have proved particularly burdensome. This atmosphere is not conducive to sustained earnings which in turn feed dividend payments.

▶ **Grumman Dividend Expected**—Noteworthy exception is Grumman Aircraft Engineering Corp. This company has already paid $1.50 per share earlier this year. While it has not yet acted on the final payment for the year, the company is expected to pay at least another $1.00 and possibly $1.50, bringing total 1947 dividend disbursements to $2.50 or $3.00 per share. This would compare with $2.00 per share paid in 1946 and $1.50 disbursed in each of the five preceding years. Grumman probably will demonstrate the best earnings performance among the aircraft builders this year, all without benefit of any carry back tax credits. The company earned $2.62 per share on 500,000 shares outstanding for the first six months of 1947 with informed estimates projecting $4.00 per share as the complete year's earnings. Most corporate extra dividend payments are currently being influenced by Section 102 of the Treasury's tax regulations, which imposes penalties on "improper accumulation" of surplus. With adequate working capital and having previously retained a large part of its profits, Grumman may be forced to disburse at least 70 percent or more of current earnings in the form of dividends. Final earnings and dividend action will be largely influenced by the nature of year-end adjustments.

▶ **United Increase Nominal**—United Aircraft Corp. recently declared a dividend of 75 cents per share on its common stock payable Dec. 1. This brings payments for the year to $1.25 as 50 cents was paid in June. During 1946, only $1.00 per common share was paid and represented a progressive reduction from the $2.00 paid in 1945, $3.00 each in the three preceeding years and a peak of $4.00 in 1941. The company also reported earnings of $1.92 per common share for the nine months ended Sept. 30, 1947, compared to $1.39 for the comparable period a year ago. The company has a 5 percent $100 par preferred stock issue, outstanding to the extent of 258,865 shares. Preceding the equities is a $25 million bank credit. While the outlook for the maintenance of dividend payments on the preferred next year is good, no large disbursements on the common may be anticipated. It is significant that for the current nine months the company expended $17 million for engineering development and research, or an increase of about $4 million for the same purpose a year ago. With its production development of the Nene engine continuing, it is a normal expectation that such research expenditures may continue at a very high rate. Moreover, carry back tax credits will no longer be available next year in which to absorb such expenditures.

Cessna Aircraft will also be in the limited group which will pay an increased dividend this year, although by a very nominal amount. The company will pay 20 cents a share on Dec. 5, 1947, which will compare to the 15 cent per share disbursement last year. There are only 700,000 shares outstanding.

▶ **Capital Structure Improves**—A definite improvement in the capital structure of Curtiss-Wright Corp. will be very re-assuring to the maintenance of the $2.00 annual dividend rate on the company's Class "A" stock. The directors of the company have asked tenders on 500,000 shares of this stock at $20.50 per share. This offer expires Dec. 3. It is believed likely that the full amount of such tenders requested may be received. At present there are 1,158,651 shares of this stock outstanding. The company recently indicated that it has about $60 million in excess working capital beyond the need of its immediate requirements. The projected retirement would involve a capital outlay of only $10,250,000. It may be presumed that additional tenders may be sought in subsequent periods. The Class "A" stock is callable at $40 per share and is entitled to $2.00 per share in dividends annually. Thus far, $1.50 per share has been paid this year. Informed sources believe that the other 50 cents will be paid during 1947.

▶ **Boeing Payment**—Boeing paid a dividend of $1.00 earlier this year, the same as in 1946 and 1945. While a nominal loss was reported by this company for the first nine months of 1947, depending on the extent of deliveries during the fourth quarter, it is highly possible for the final results of the year to be converted into a profit. As volume deliveries are not scheduled until 1948, it is probable that profitable results may be reported for that year which will permit the maintenance of dividends.

Consolidated-Vultee paid 25 cents per share on May 15, 1947, representing its last payment for the 1947 fiscal year. The company is currently segregating its aviation and non-aviation properties, (AVIATION WEEK, Nov. 3, 1947). In view of the substantial losses entailed by the two constituent units, the divested Convair aircraft company and the new Nashville Corp., dividends for both appear indefinitely postponed.

Douglas Aircraft paid only $2.50 per share this year, which compared with $7.50 disbursed during 1946. While the company declared that it anticipated a loss this year, it planned to maintain dividend payments.

The Glenn L. Martin Company was maintaining a $3.00 annual dividend rate and paid 75 cents per share early this year. However, the 2-0-2 and 3-0-3 program required substantial cash outlays and the company was forced to seek credit assistance from the RFC and to omit all subsequent dividend payments this year.

Lockheed, North American, Republic, Beech, Fairchild Engine and Bell all paid some dividend last year but have refrained from doing so thus far this year.

It will take a restoration of earnings and an improvement in finances among the aircraft builders before any appreciable dividend disbursements may be anticipated in the industry.

—Selig Altschul

AT LAST!

A GEAR PUMP FOR 3000 P.S.I. AIRCRAFT HYDRAULIC SYSTEMS

Yes, it's here *NOW!* A gear type aircraft hydraulic pump that will operate with exceptional efficiency at pressures up to 3000 p.s.i. A pump that is quieter and smoother in operation and will operate more satisfactorily at higher altitudes than any pump that PESCO has ever made. And it's *Pressure Loaded* . . . an exclusive PESCO development which *automatically* maintains minimum clearance between pump gears and bearings, making possible continuous high operating efficiencies over a wide range of altitude and temperature.

This new PESCO pump for operation of wing flaps, landing gears and other aircraft parts with *Pressurized Power* was perfected after considerable research and experimental work. It has been thoroughly tested . . . tests which show that it can boast a 90 per cent *plus* volumetric efficiency at 12 inches mercury suction . . . that it rates an 80 per cent over-all efficiency. It is built in sizes to handle 2, 2½, or 3 g.p.m. at 1500 r.p.m. at pressures up to 3000 p.s.i. . . . and is suitable for operation at 3750 r.p.m. It is available with either 12 or 16-tooth spline drive on a standard 5-inch bolt circle pad. You can get full information by writing for Bulletin No. 114 to Dept. 8-C.

In Precision Hydraulics, Fuel Pumps, Air Pumps, Related Accessories and Aircraft Electric Motors . . . Performance Points to PESCO First.

Pesco PRODUCTS DIVISION
BORG-WARNER CORPORATION
11610 Euclid Ave. · Cleveland 6, Ohio

MANUFACTURERS OF BW SUPERCHARGERS

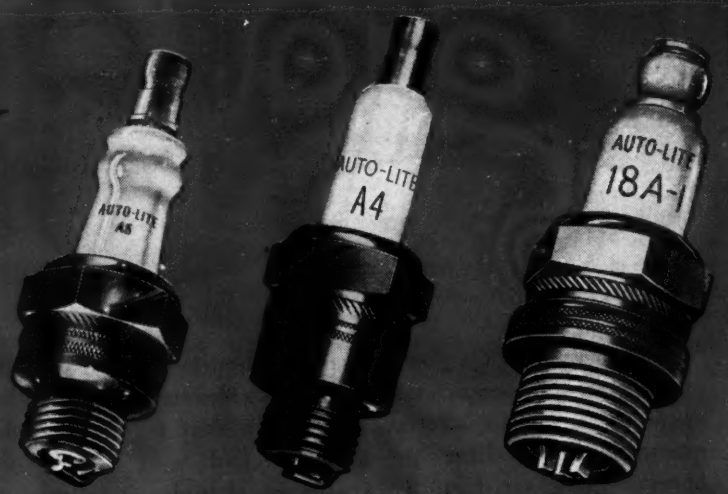
AUTO-LITE

aircraft Spark Plugs

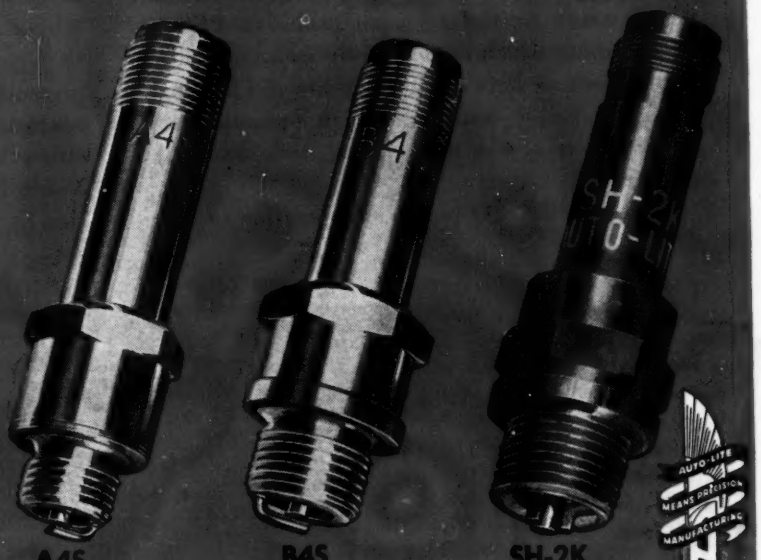
AUTO-LITE aircraft spark plugs all have C.A.A. approval for use on engines as specified. These include Lycoming, Continental, Franklin, Warner, comprising practically the entire volume produced for light aircraft. Send for literature containing complete information.

THE ELECTRIC AUTO-LITE COMPANY
Toledo 1, Ohio
Toronto, Ontario

Tune in the Auto-Lite Radio Show Starring Dick Haymes—Thursday Nights, 9:00 P.M. —E.T. on Columbia Broadcasting System



Money cannot buy a better Spark Plug



NATA Convention Delegates Urge Relief From CAA Regulations

Springfield meeting re-elects Beverly Howard, adds two more state members; revises dues for affiliation.

Grass-roots appeals to Congress for relief from over-regulation by CAA were urged at the Springfield, Ill., meeting of National Aviation Trades Association delegates from 29 state associations.

In an action-packed one-day convention preceding the fifth National Aviation Clinic, the fixed base operators:

- Established a new committee for closer liaison with the Veterans' Administration on GI flight school problems.
- Continued Beverly Howard, Charleston, S. C. operator, in office as president for the second year of his two-year term, refusing his request to resign.
- Admitted two additional state associations, Arkansas and Tennessee, into membership in the NATA Federation which now claims 32 state members.
- Voted to establish a $24,000 budget for the national office for 1948, with revised dues for member operators increasing minimum dues from $150 to $300 for state and national affiliation.
- Endorsed efforts by CAA and other agencies and research organizations and manufacturers to reduce airplane noise through technical aircraft changes, but condemned any government trend toward regulations to force a decrease in airplane noise.

The important new Training Liaison Committee, headed by John Wilson, Chicago operator, who was named NATA vice president for training, also includes Mario Fontana, Iron Mountain Mich., Robert S. Northington, Winston-Salem, N. C.; Roscoe Turner, Indianapolis; John Clinch, North Platte, Nebr.; Joseph Garside, Norwood, Mass.; Robert Ashburn, Alexandria, Va.; and Norman Larson, Los Angeles.

▶ **Policy on CAA**—Job of crystalizing an association policy opposing over-regulation by CAA and encroachment of new CAA actions, was turned over to the NATA headquarters steering committee headed by President Howard, and Harry Meixell, executive director. The committee was instructed by the delegates to prepare Association recommendations for basic revisions by Congress of the Air Commerce Act for 1938, and for clarification of regulations directly applying to operators.

Meixell also was instructed to protest on behalf of the state associations, the proposed revision of Economic Regulation part 292.1C which would require every operator of any flight service for hire including charter and instruction, to file periodic reports to CAB. Roscoe Turner, reporting on the revision, described it as "saddling an additional cost on the operator that he can't afford to pay." Turner said it required the full time work of two office girls to keep up with the reports to VA on his GI flight school program now, and that additional reports to SAB if made effective, would require an additional office girl. "If we don't call a halt somewhere," Turner added, "they will be deciding how much profit we should make. The government has no business sticking its nose into our affairs through economic regulations."

▶ **Encroachment Protest** – President Howard protested "the continual encroachment by CAA and CAB. If we lived up to all the things proposed by the Administrator and his staff we would be working 90 percent for them and 10 percent for ourselves," he declared.

Wilson urged direct appeal to Congressmen by individual operators and state associations. "There is one way of shipping CAA," he said. "Tell Congress not to give them any money. We would be better off in this business if we had never had a CAA. They ought to be only a public relations outfit for aviation."

▶ **Untangle Regulations**—Ben Harris, Champaign, Ill. delegate, called for a new law to untangle the regulatory burdens, while Larson warned the operators that if we go too far in eliminating federal regulations, "we are just inviting establishment of 48 different sets of state aviation regulations."

GI flight operators were warned of a pending new VA policy to cut the price of supervised solo time down to regular solo time. A legal test case is now being prepared against a North Carolina operator, Paul McMurray, from whom $6,500 has been withheld as the difference between flat solo rate and controlled course supervised solo payments which he has already received. The action is contrary to a local VA ruling in St. Louis, it was reported, where the VA legal staff recognized the difference between controlled course and flat rate solo and ordered payment of an operator there whose payments had been similarly withheld.

▶ **Forms Prepared**—NATA is preparing a set of standard accounting forms for GI flight schools, on which national VA office approval will be sought and which then may be distributed for a more uniform system of GI flight school administration.

The operators passed a resolution pointing out the valuable role which the GI flight training program was playing in building a reservoir of trained pilots for use in national defense.

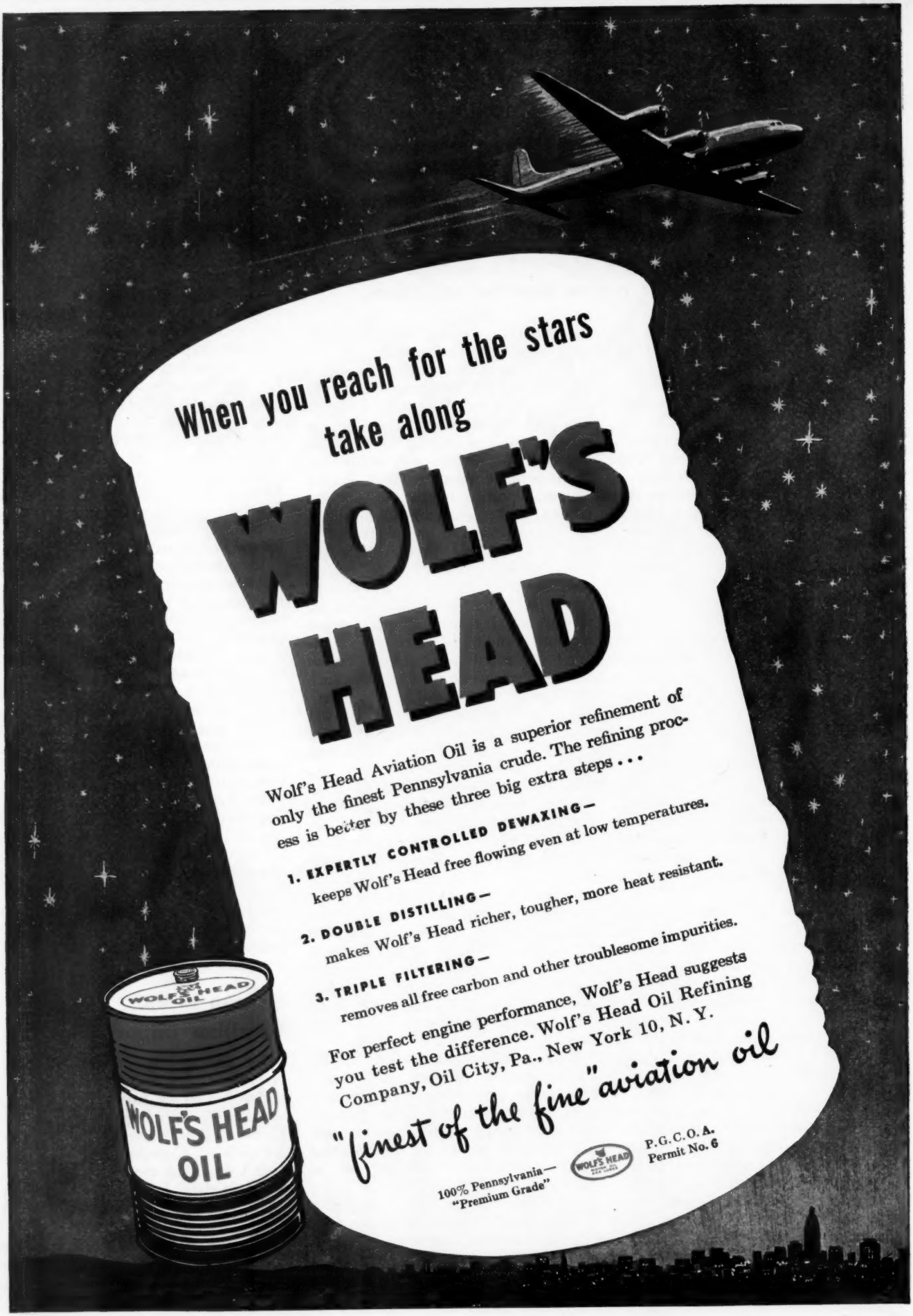
Jerome Lederer, aviation insurance engineer, reported to NATA that aviation insurance interests had agreed to underwrite printing expense of a booklet containing an approved code of good airport operating practices which will be copyrighted by NATA and distributed by it to airport operators. The code has been developed as a step toward safer operations and curtailment of aviation insurance losses, and the consequent eventual lowering of aviation insurance rates.

Dr. Leslie Bryan, University of Illinois Aeronautics Institute Director, told NATA that the disputed VA ruling on GI flight training in colleges (AVIATION WEEK, Nov. 17) was being considered by the American Council on Education, and he was hopeful the elective flight course would "be back in before the end of the year."

Stinson Leads Brazilian Imports

138 Stinson Voyagers constituted 31 percent of the American planes imported by Brazil from July 1946 to Sept. 1947, according to William H. Klenke, Jr., general sales manager, Stinson division, Consolidated Vultee Aircraft Corp. The closest competitor in the four-place field delivered slightly under 8 percent of the total 443 aircraft imported during this period.

Closest competitor in the two-place field delivered a total of 80 planes or about 18 percent. Four other firms delivered 50 aircraft in the same period.


When you reach for the stars take along
WOLF'S HEAD
Wolf's Head Aviation Oil is a superior refinement of only the finest Pennsylvania crude. The refining process is better by these three big extra steps . . .
1. EXPERTLY CONTROLLED DEWAXING— keeps Wolf's Head free flowing even at low temperatures.
2. DOUBLE DISTILLING— makes Wolf's Head richer, tougher, more heat resistant.
3. TRIPLE FILTERING— removes all free carbon and other troublesome impurities.
For perfect engine performance, Wolf's Head suggests you test the difference. Wolf's Head Oil Refining Company, Oil City, Pa., New York 10, N. Y.
"finest of the fine" aviation oil
100% Pennsylvania— "Premium Grade"
WOLF'S HEAD
P.G.C.O.A. Permit No. 6
WOLF'S HEAD OIL
WOLF'S HEAD OIL

Hartranft Scores Air Rule Proposals

Four proposed modifications of Civil Air Regulations, Part 60, were attacked by J. B. Hartranft, Jr., general manager of Aircraft Owners and Pilots Association, in testimony before the Civil Aeronautics Board recently, as detrimental to the interests of private pilots and non-scheduled aviation.

Proposals under fire include:

- Instituting a restrictive 1,000 ft. ceiling and 3 mile visibility minimum regulation in airport control zones.
- Reinstating right-side airway separation regulation.
- Reinstating regulation for crossing airways at angle of not less than 45 degrees.
- Instituting a restrictive hours-of-darkness regulation.

Hartranft cited an agreement reached at an industry panel on the proposed new regulations, which provided that all except these points would remain unchanged. However, he declared airline interests are proposing additional modifications, "breaking faith" with the industry agreement, and "repudiating the whole spirit in which the new draft of Part 60 was conceived."

Hartranft argued that climatic and terrain differences within the U. S. made the 1,000 ft. ceiling 3-mile visibility regulation "arbitrary and unenforceable," and cited a Weather Bureau booklet, "classified flying weather for the U. S." in support of his contention. He attacked a trend to establishing large irregular and non-uniform control areas in lieu of the uniformly small three-mile areas originally planned. CAA is contemplating more such irregular zones to accommodate instrument low-approach systems at the 52 instrument landing fields now in operation, and presumably at the additional 98 stations included in the future installations program. Existing proximity-to-cloud regulations afford adequate protection between aircraft on contact flights and traffic performing instrument letdowns, he said.

The right-hand traffic regulation on airways is not followed by the airlines "meticulously," he said, and he urged that there was nothing in the accident record suggesting need for either the right-hand traffic or 45 degree airway crossing regulation.

► **Criticizes "Sandbagging"**—Hartranft sharply criticized "official sandbagging" of pilots by Government administrative agencies, and cited a typical case of a pilot who made a forced landing due to engine failure on Henry Hudson Parkway in Manhattan. First the pilot was cited by New York police to appear on criminal charges, and was threatened with 30 days in prison plus a $50 fine and by a $4,000 fine by CAA, Hartranft said. After a court appearance the charges were dismissed, but then the CAA regional attorney re-opened the whole case, with a letter calling for a compromise settlement of $250 to avoid penalties for alleged violations. The AOPA manager said this was typical of the multiplicity of useless regulations which are cluttering up the few important rules of the air, and hampering aviation development.

He also attacked mis-interpretation of the "reckless flying" clause, which was described in advance of promulgation, as applicable only when and where there was a dangerous type of flight activity which was not otherwise specified in the regulations. Now, he asserted, "the legal minds of the CAA have applied the reckless flying section as an addition and companion violation and thus have been successful in pyramiding multiple charges against the pilot."

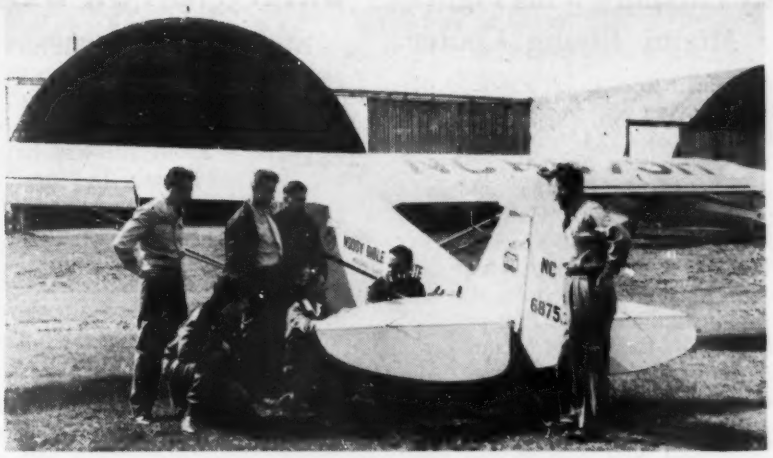
Objection to the change in the hours-of-darkness regulation was based on the fact that the regulation would necessitate installation of complete electical systems and navigation lights in thousands of personal planes not now so equipped.

Engines now powering most lightplanes make no provisions for mounting generators and no gearing to drive a generator. A crankcase modification, costing approximately ¼ value of the engine, would be the only way such planes could provide lights.

He cited the following figures, reported by engine manufacturers:

- Continental—58,000 A-65 engines and 1,200 A-50 engines are in current use in which no provision can be made for generators without conversion costing roughly $300 per engine, while the company continues in production at rate of 500-600 engines a month which are without generator equipment or provision for it.
- Franklin—5,901 engines are in use, without provision for generators, and manufacturer states conversion is highly impractical.
- Lycoming—2,000 engines in use without provision for generator, and requiring modifications costing 25 percent of engine cost, for conversion.

Totalling all these engines, 67,101, Hartranft estimated that it would take an aggregate cost of $18,025,000 to convert the engines, aside from approximately 6,000 not susceptible to practical conversion. This would be an eighteen million dollar penalty against non-scheduled aviation as a result of the change in the darkness regulation, he charged.



FLYING MISSIONARIES

Pilot instruction and aircraft maintenance courses have become part of the preliminary training given by the Moody Bible Institute of Chicago, Ill., to students who will become missionaries to distant regions. The non-denominational Institute charges no tuition, but for the flying course the students pay $3.50 a flying hour to cover operating expenses at Elmhurst Airport, near Chicago, where former Army pilot Ernest W. Frost is shown conducting class. Course extends 15 weeks and covers navigation, mapmaking, repairs and 50 hours of flight instruction. (Wide World photo)

Stinson Plans 1948 Sales

Consolidated Vultee's Stinson Division has started a series of sectional sales meetings for dealers and distributors in key cities to bolster its sales organization and promote higher volume.

General sales manager William H. Klenke, Jr. stresses need for sales of both new and used aircraft, strong service and parts departments, and acquainting prospects with ownership advantages. Specific recommendations included offers of "free solo courses" to arouse active interest in flying, free business trips within a 200-500 mile radius, or a combination of both.

Betty Carstairs Wins Fight For Miami Flying Center

Court fight to establish a million dollar private-flying center and yacht basin on Lummus Island, near Miami Beach, Fla., has been won by Betty Carstairs, wealthy British sportswoman and flyer. The Florida Supreme Court upheld Dade Circuit Court, and Special Master William E. Walsh's report, which held that the island is adapted for use only as an industrial area, and that proposed restrictions by the city of Miami Beach were "unreasonable, arbitrary and discriminatory and without substantial relation to public health, and operate to confiscate said land without just compensation to plaintiffs."

As announced nearly two years ago (AVIATION NEWS, Jan. 14, 1946) the Lummus Island airport and seaplane base was planned to include a 3,500 ft. runway, hangars for 500 planes, complete sales, school, maintenance, and restaurant facilities for private flyers, and the operation of a six-minute speed boat service between the island and Miami Beach.

The airport was to be operated by The Four Winds Air Association, Inc., headed by Miss Carstairs, a British subject who has filed first application papers for U. S. citizenship. Opposition to establishment of the airport was led by residents of nearby communities, who asserted it would depreciate property and objected to the airplane noise nuisance.

Leech Aircraft Of N. Y. Shifts Stinson To Cessna

Leech Aircraft, Inc., 420 Lexington Ave., New York, long-time Stinson sales agency in the metropolitan area, last week announced termination of the Stinson contract, to accept a similar agency with Cessna Aircraft Co., Wichita. Spencer J. (Spinney) Leech, president of the company, established operations at Westchester Airport, Armonk, N. Y., in 1933, and in 1934 took over operation of the airport. Later he transferred operations to Roosevelt Field, L. I., until the war terminated private flying activity there.

In 1945 the company reopened business at the Lexington avenue address, with flying field headquarters at Teterboro (N. J.) air terminal. Leech meanwhile had served as Consolidated Vultee Aircraft Corp. representative in India, and later as regional representative of Convair's Stinson division, before rejoining his New York company. Garnet Hughes, who served with the AAF in World War II and with the British Royal Naval Air Service in World War I, is vice-president.

BRIEFING FOR DEALERS AND DISTRIBUTORS

NEW CESSNA COMPETITOR—The new Cessna Model 170 four-placer which made its first flight recently at Wichita on a basis of promised price alone will be a serious competitor for all the other four-place planes. Wichita spectators say it looks like an oversize two-place 140, has all-metal fuselage and fabric-covered wings and is about half-way between the two-placers and the big four-to-five place 190-195s in size. It is powered by a new type Continental 145 hp. engine and is capable of speeds better than 100 mph. Cessna plans quantity production of the airplane, which will be sold for "around $5,000" early next year. If around $5,000 doesn't mean $6,000, on the basis of present prices the Cessna 170 may well be the lowest priced four-placer on the market when it comes out, and as such command the very large segment of the consumer market which naturally gravitates toward the lowest priced vehicle. Stinson and Luscombe, please take notice.

JURY VOTES—What Air Force magazine, monthly mouthpiece of Air Force Association, describes as a fresh approach to magazine reviews of new aircraft makes its debut this month with an appraisal of the Goodyear GA-2 amphibian, done by the Westchester (N. Y.) AFA squadron. A six-man test team included two pilots, two maintenance men and two technicians, all former Air Force personnel. It is planned to give other new airplanes similar "reviews" after test flights. The six-man jury's verdict on the GA-2: poor visibility on the water made possible only land takeoffs and landings; taxiing characteristics, normal (even at fast speeds control appeared quite accurate); Takeoff run, 700 ft. in still air, or 11 sec. timed; Rate of climb, about 650 ft./min.; level cruising speed at 75 percent of power, 100 mph.; top speed 125 mph. without too much trouble; Stall characteristics, easy and pleasant, resembling those of a PT-19. After several suggesting of minor changes, the jury recommends extending the 300-mile range and otherwise concludes that the GA-2 as it stands is a neat package; is easy to fly and maintain; and handles like a lightplane in most respects.

75-DECIBEL Ercoupe—Out at Erco field, Riverdale, Md., they have been flying an experimental two-place Ercoupe with a four-blade Sensenich small diameter propeller and a special muffler which makes the sound meter register about 75 decibels at 300 ft. altitude. Considering that the super-quiet NACA experimental Stinson L-5 with the eight-blade propeller plus a geared engine and the 50-lb. muffler was only 12 decibels quieter (AVIATION NEWS, June 9, 1947) at 300 ft., and was considered really a little too quiet by some auditors, maybe Fred Weick, brilliant father of the Ercoupe, has come up with another winner. Incidentally, some of the younger generation may have forgotten that Weick was a top propeller engineer and author of the best known standard text book on propellers before he got mixed up in the two-control stall-proof spinproof everyman's plane business.

MIDGETS AT MIAMI—Sponsor for a 190-in. piston displacement race at the Miami (Fla.) air maneuvers, Jan. 9-11, 1948, will be Continental motors, according to announcement from Miami. The race presumably is designed to admit virtually all the midget racers which participated in the Goodyear Trophy eliminations at Cleveland last Labor Day. By some coincidence, every Goodyear Trophy racer used an 85 hp. Continental engine of 190 cu. in. piston displacement, that being the only stock engine which exactly met the requirement.

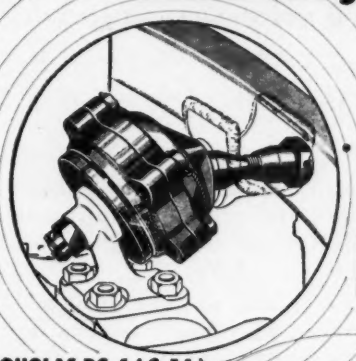
AIRPORT TROPHY WINNERS—Four awards were made at the Springfield, Ill. National Aviation Clinic, to winers of the Haire airport trophies for outstanding achievement in airport development and operation during 1947. The winners: Oklahoma City Downtown Airpark (AVIATION WEEK, July 7, 1947), for close-in, in-town or resort airparks; William L. Anderson, Pennsylvania state aeronautics director, for development of airports for commercial and personal flying; Bud L. Holman, manager, Vero Beach (Fla.) Airport, for domestic trunk airlines terminal, and Col. Victor J. Dallin, director, Philadelphia bureau of aeronautics, for international airline terminal.

WEST VIRGINIA HILL PORT—Recent dedication of Kanawha Airport, just outside Charleston, W. Va., puts an exclamation point to a story of local community enterprise in the face of topographical obstacles, which is too long to detail here. The airport is situated on top of what used to be Coonskin Ridge. Grading alone cost $4,500,000 out of the total $6,000,000 invested so far. Project required moving of more than 9,000,000 cu. yds. of earth. When completed it will provide three runways (two now completed) of 6,000, 5,500 and 5,000 ft. Federal airport aid is expected to be available for matching local funds needed to complete the airport at an additional cost of nearly $1,500,000, mostly for paving.

—ALEXANDER McSURELY

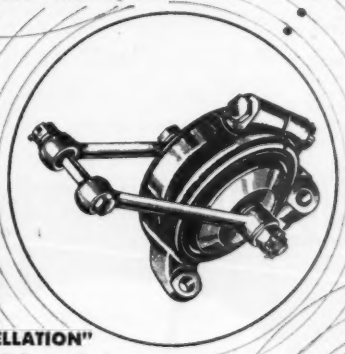
When you Recondition Aircraft . . .

INSTALL Genuine LORD SHEAR TYPE Dynafocal Engine MOUNTINGS THROUGHOUT



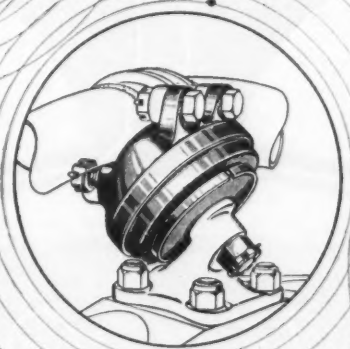
MR-26 ASSEMBLY
[Consists of eight MR-26-SA sub-assemblies]

For DOUGLAS DC-4 (C-54)
Using Pratt & Whitney R-2000 Series Engines



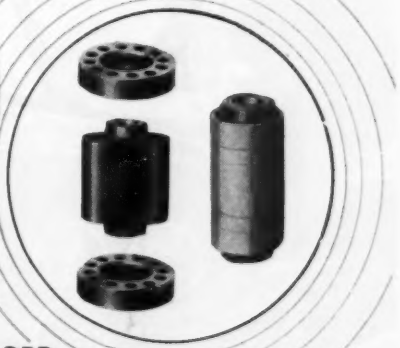
RL-35 ASSEMBLY
[Consists of nine RL-35-SA sub-assemblies]

For LOCKHEED "CONSTELLATION"
Using Wright R-3350 A & B Series Engines



MR-36, MR-36F, and MR-36J ASSEMBLIES
[Consists of six MR-36-SA; six MR-36F-SA; two MR-36J-SA and four MR-36J-SA1 sub-assemblies respectively]

For CONSOLIDATED "240"
CURTISS CW-20 (C-46)
DOUGLAS DC-6 (C-112)
FAIRCHILD "PACKET" (C-82)
MARTIN 202
MARTIN 303
Using Pratt & Whitney R-2800 A & B Series Engines, use MR-36
Pratt & Whitney R-2800 C Series Engines, use MR-36F, MR-36J



LORD ENGINE MOUNTINGS FOR DC-3

Item	P & W 1830 Series Quantity Per Plane	P & W 1830 Series Part Number	Wright 1820 Series Quantity Per Plane	Wright 1820 Series Part Number
Tube Mounting	8	J1202-1	8	H5013-3
Insert	16	J1789-1	18	SK1925-1
Sandwich	32	SK1292-1	36	SK1292-2

New Lord Service & Maintenance Manual contains valuable information on maintenance problems, suggestions for increasing service life, and parts lists. Write for your copy.

LORD MANUFACTURING COMPANY ERIE, PA.

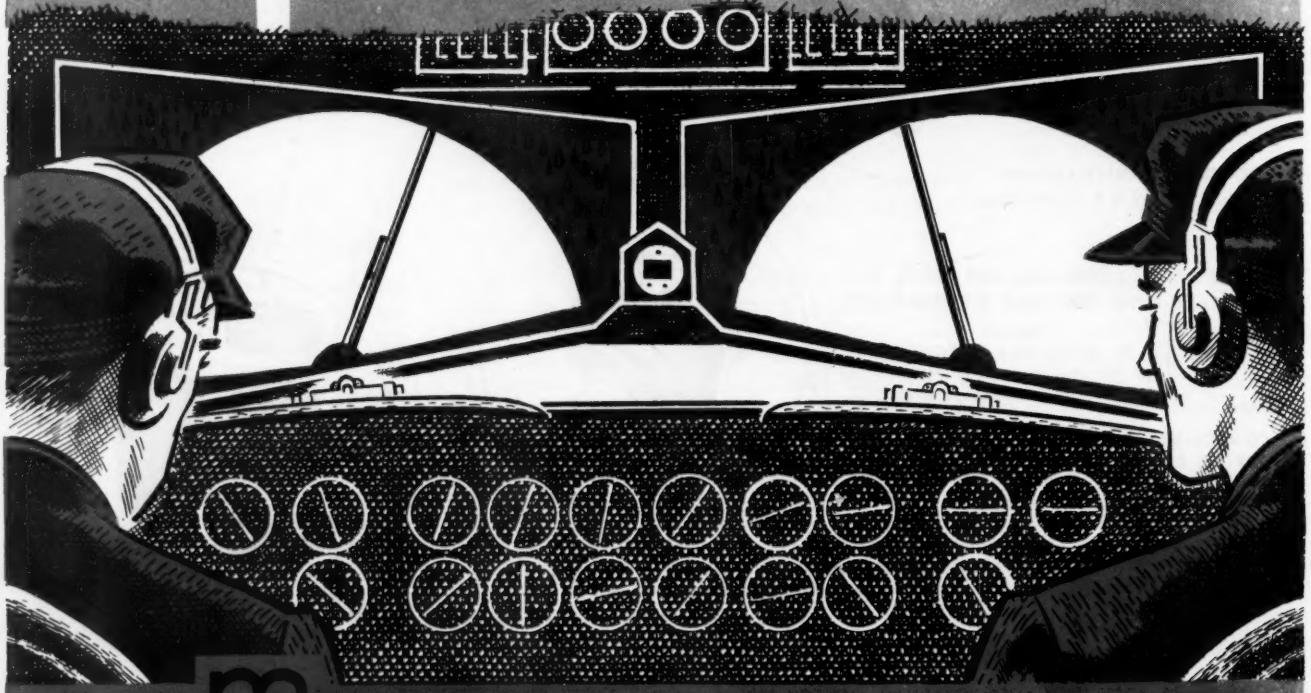
FIELD OFFICES { New York, N.Y. Providence, R. I. Washington, D. C. Detroit, Mich. Chicago, Ill. Burbank, Cal.
Canadian Representative: Railway & Power Engineering Corp., Ltd., Toronto, Canada.

The NEW Marquette model 3V hydraulic wiper

. . . is the result of 10 years of experience in this highly specialized field. It incorporates every feature that is desirable and practical, based on thousands of installations on military, naval and commercial aircraft.

gives you *all* these advantages

- Blades are synchronized at all times.
- Obstruction in path of blade will not stall it.
- Blades may wipe in same or opposed direction.
- Blades are parked and locked when wiper is not in use.
- Universal drive arm and tie rod require minimum stock of parts.
- Wiper blades are easily replaced.
- Pressure is removed from system when not in operation.
- Motor unit may be located at any position in the airplane.
- Stroke on each window can be varied.
- Hydraulic tubing eliminates linkage control and provides additional space for mounting other instruments.
- Motor unit and window units are universal, providing maximum interchangeability of parts.
- Constant torque values through entire stroke.
- Uniform stroke at all speeds.
- Simplicity of design, resulting in lower first cost and reduced maintenance expense.



The Marquette METAL PRODUCTS CO.

CLEVELAND 10, OHIO

SUBSIDIARY OF CURTISS-WRIGHT CORPORATION

Manufacturers of: HYDRAULIC AND ELECTRIC WINDSHIELD WIPERS · FUEL OIL PUMPS
HYDRAULIC GOVERNORS FOR DIESEL ENGINES · ROLLER BEARING TEXTILE SPINDLES
AIR COMPRESSORS · PRECISION PARTS AND ASSEMBLIES

Airlines' Pilot Selection Methods Hit In CAA-Sponsored Survey

Present procedure for rating pilot performance fails to stress factors which cause critical situations leading to accidents, researchers find.

With the Air Line Pilots Association continuing to eye the whole project suspiciously, the Civil Aeronautics Administration last month disclosed results of a research study designed to improve methods of selecting and upgrading cockpit personnel.

Surveys made with CAA funds by the American Institute for Research, Pittsburgh, under a contract with the National Research Council's committee on aviation psychology indicated that procedures presently used by the airlines in selecting pilot applicants are not adequate for predicting subsequent success or failure during training. Current methods of evaluating pilot performance rely more on personal judgments than objective measurements and do not stress the factors which cause accidents, the researchers found.

► **Interviews Held**—Information for the study was obtained by interviewing 270 airline pilots, 42 CAA air carrier inspectors and 16 company check pilots. The researchers also analyzed 121 CAB reports on domestic accidents on the scheduled airlines and 1,278 CAA files of pilots who had passed the physical examination for a transport certificate but not necessarily the written and flight tests.

The study was initiated to obtain data on five principal questions:

1. What does it take to be a safe and effective airline pilot?
2. Are present methods of selecting airline pilots adequate for differentiation between those who are most likely to become successful pilots and those most likely to fail?
3. How could present methods of evaluation be improved?
4. What are the factors producing critical situations in airline flying?
5. What are the causes and effects of pilot fatigue?

Next step of the research group calls for development of improved practical procedures for examining the flight proficiency of airline pilots.

► **Approach Technique**—Most critical aspect of the pilot's job was found to involve the skills of establishing and maintaining a proper angle of glide, rate of descent and speed of glide on the landing approach. Failure to perform this part of the pilot's duties adequately was shown to result in three times as many accidents as failure to perform any other part of the job.

► **Development of Emergencies**—Analysis of the flight phase in which 652 airline incidents developed showed 319 critical situations during final approach and landing, 238 in normal flight, 55 during takeoff and 27 while taxiing. From interviews with 240 airlines pilots, only 70 incidents involving fatigue were obtained.

Of 429 unsafe conditions (factors other than the pilot) reported as contributing to critical situations in airline flying, 244 involved weather, 78 unsafe conditions of the plane (largely engine failure), 64 unsafe condition of airports, and 42 traffic conditions.

► **Selection Requirements**—In order to determine if airline selection requirements for pilot applicants were critical requirements, matched groups of applicants who were later eliminated and applicants who successfully completed training were compared as to age, education, I.Q. scores, mechanical comprehension test scores, personality inventory scores, previous flying hours, marital status and previous ground training in aeronautics. No significant differences were discovered between the successful and unsuccessful applicants.

Data from this comparison thus indicated strongly that present selection requirements of the airlines are not critical requirements since they do not predict later success or failure during training. Achievement on flight checks does predict later success or failure, but the study found that CAA inspectors, company check pilots and captains put greatest emphasis on aspects which seldom contribute to critical situations actually experienced by airline pilots.

► **Question Posed**—CAA inspectors and company check pilots were asked, "when you check a pilot, what are the things you particularly look for which you feel differentiate a good airline pilot and a poor one? Of 234 specific things which they said they looked for particularly, only 74—or 34 percent—had to do with pilot behavior which was previously found to be most vital from the standpoint of contributing to critical situations and accidents.

The four most frequently mentioned kinds of behavior which the CAA examiners and company check pilots looked for are types which do not rate among the first eight most critical components of the pilot's job as determined from the analyses of critical incidents and accidents. The most critical component as determined by actual accidents (pilot behavior on landing approach) was mentioned by only one of the inspectors and check pilots.

► **ALPA View**—Attitude of the Air Line Pilots Association, which has opposed the study from the start, impeded the project. ALPA president David L. Behncke declared last spring (AVIATION NEWS, June 9) that his union opposed "attempts to make its members guinea pigs for professional psychological careerists." He added that efforts to single out transport pilots for mass psychological experimentation constituted "a gross intrusion" on their private rights.

In issuing their reports, the research group and CAA emphasized that the results of their project will not be used to eliminate pilots already employed by the airlines.

► **Other Pilots Included**—As a result of ALPA's stand, about 25 percent of the 270 pilots interviewed were employes of uncertificated airlines. The latter group was included in the sample after interviews with scheduled airline pilots were discontinued midway in the survey "pending further clarification of the studies for ALPA."

ALPA's touchiness on the research program may have been heightened by the union's dispute with American Airlines over the carrier's Ardmore (Okla.) Training School project whereby copilots and pilots were assigned from their regular duties for the equivalent of a CAA transport rating check.

American claimed a thorough recheck of all pilot personnel was necessary to reestablish the high pilot proficiency standards of prewar years. The union complained that the screening program upset traditional pilot-company arrangements on weeding out incompetent pilots and that men were given no chance to prepare for the check tests.

NEW AIR MAIL BOSS

Postmaster General Robert C. Hannegan swears in Paul Aiken, of Macksville, Kas., as the new second assistant Postmaster General. Aiken will handle air mail matters in the Department. (Post Office Photo)

DC-6 Grounding Swells Deficits

United and National press CAB for higher mail pay to offset losses.

Rising costs, failure of traffic to measure up to expectations, and finally the serious blow suffered when the DC-6s were grounded last month have forced two trunklines to seek prompt action from CAB on new bids for higher mail pay.

United Air Lines, with its remaining 34 DC-6s out of service, and National Airlines, which has four DC-6s grounded, spelled out in detail why larger mail pay increases than were asked last summer are now necessary. Urgency of NAL's plea was reminiscent of the calls for aid made last winter by Western Air Lines, Capital Airlines (PCA) and others as they suffered a financial squeeze.

▶ **UAL Case**—Last summer, United estimated that its present mail pay of 45 cents a ton mile should be boosted to $1 a ton mile, retroactive to Jan. 1, 1947, in order that a fair profit might be made on its operations. Further studies completed by UAL late in October indicated that the carrier would need $1.87 a ton mile for calendar 1947 and $1.25 thereafter.

Grounding of the DC-6s forced a further revision. United now states that a fair and reasonable mail rate for calendar 1947 is $2.20 a ton mile, with $1.25 a ton mile required after Jan. 1.

▶ **Losses Estimated**—Prior to the grounding of the DC-6s, UAL figured it would earn $492,000 in October, and lose $53,000 in November and $779,000 in December. Grounding of the DC-6s will boost November's deficit to $1,590,000 and December's to $1,978,000, the carrier estimated.

Loss as a direct result of the DC-6 situation would be $2,736,000 during the two months. United told CAB it expects to have its DC-6s back in service before year-end, and thus no need is seen now for boosting the $1.25 a ton mile mail rate requested on and after Jan. 1, 1948.

▶ **Deficit Next Year**—Under the existing mail rate of 45 cents a ton mile, and taking into consideration the DC-6 grounding, United expects to have an operating loss of about $5,267,000 in calendar 1947. Its operating deficit at the end of the first nine months was $2,191,395. The carrier said it would suffer an operating loss of $1,982,000 in calendar 1948 on the basis of existing mail rates and passenger fares.

United stated that grounding of its DC-6s on Nov. 11 would have caused a reduction of 49 percent in the number of seat miles flown had measures not been taken to increase utilization of DC-4s and DC-3s. In an effort to keep losses at a minimum while the DC-6s are idle, United was forced to dismiss or furlough a substantial number of employes.

▶ **NAL Situation**—Meanwhile, National Airlines reported to CAB that recent losses have reduced the company's working capital "to a precarious position." During the five months from May through September, NAL had an operating deficit of $1,020,321, and a further deficit of between $150,000 and $200,000 was expected in October.

Liabilities due and payable on Oct. 31 or in 45 days thereafter totaled $932,278, or $5,707 more than the cash available to liquidate the debts. "In view of the fact that traffic has shown no tendency to increase during recent weeks," National continued, "it cannot be expected that November and December will show any better operating picture than was shown in September and October."

▶ **Personnel Cut**—The carrier said it made a 10 percent personnel reduction in February of this year and a second 10 percent cut in September, adding that it could not pare its payroll further. National declared that grounding of its four DC-6s will result in substantial revenue losses. The company does not have sufficient equipment of other types to replace schedules formerly operated with DC-6s.

During recent weeks National's operating expenses were increased as a result of gasoline price rises which will aggregate $150,000 annually and a boost in non-contract employes wages aggregating $200,000 to $250,000 annually.

▶ **Credit Unavailable**—The present financial condition of the company makes it impossible to secure further credit, and the condition of the stock market, coupled with the firm's financial position, makes it impractical to secure additional equity financing," NAL told CAB.

Last July, National said its present 60 cents a ton mile mail rate was inadequate and asked for a 60 cents a ton mile rate based on a "minimum poundage factor" of at least 500 lb. a revenue mile for the period beginning May 1, 1947. The carrier now is asking immediate action on its petition for a 60 cents a ton mile mail rate based on a minimum poundage factor of at least 1,000 lb. a revenue mile last May 1.

During the first eight months of this year. National carried an average of around 115 lb. of mail per revenue plane mile flown. The "phantom loads" called for if CAB bases National's mail rate on a 1,000 lb. minimum poundage factor would, in effect, boost the carrier's mail pay to nearly nine times the current level.

DC-3 For a Maharajah

An Indian potentate, the Maharajah of Idar, has purchased a DC-3 from the Flying Tiger Line, Burbank, Cal. The plane, converted by Flying Tiger maintenance crews into an executive model for the Maharajah's personal use, has two mahogany writing desks, mahogany and stainless steel galley, mahogany rest room, two oversize couches and six gabardine covered chairs.

● Built by Douglas Aircraft Co., Inc., the Skystreak is powered by an Allison-built General Electric TG-180 Axial Flow Gas Turbine.

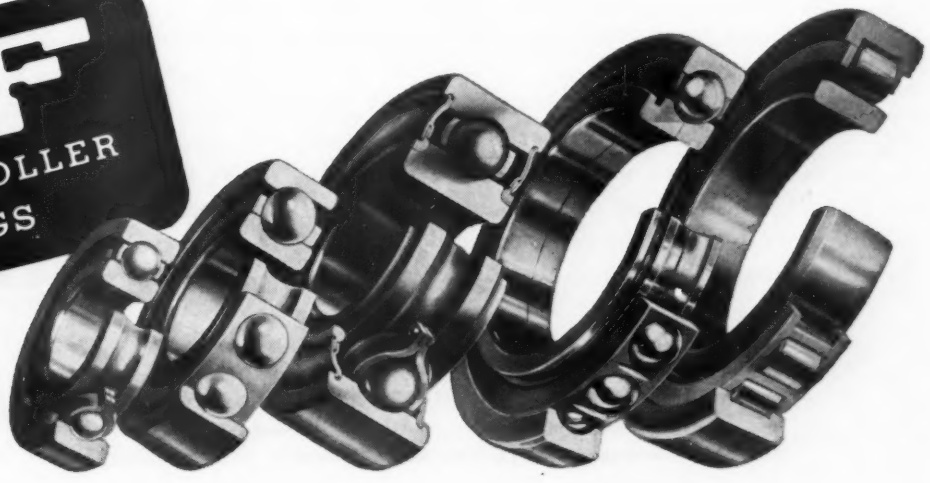
The SKYSTREAK record-breaker at 650.6 m.p.h.

Driven by an SKF-equipped Axial Flow Gas Turbine of 4000 pounds thrust, the Navy's Douglas Skystreak flashed across the Mojave Desert at 650.6 miles an hour to set a new world's speed record. Aviation's record-breakers have depended upon SKF Bearings since *The Spirit of St. Louis*. With skill developed throughout many years of pioneering achievement, SKF Bearings run smoothly under high temperatures at extremely high speeds. It makes little difference to SKF whether a plane's designed for experimental purposes or for mass production . . . whether its power is reciprocating or turbine . . . whether it's a biplane, a monoplane, an autogiro or a helicopter. SKF puts the right bearing in the right place.

6387

SKF INDUSTRIES, INC., PHILADELPHIA 32, PENNSYLVANIA

SKF
BALL AND ROLLER
BEARINGS

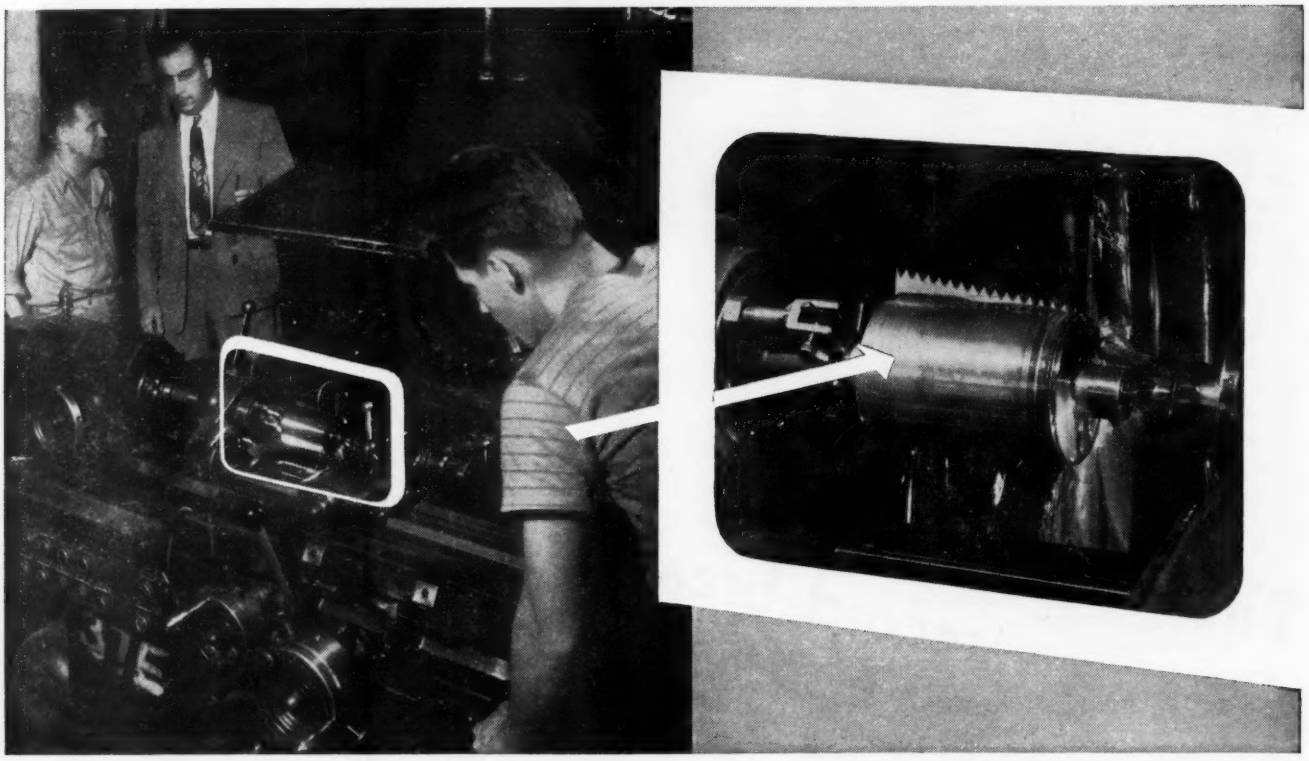


"We get better threads with

GULF THREAD GRINDING OIL

--and greater operator acceptance"

says the management of this modern shop



—"objectionable odor and skin irritations eliminated"

The Foreman (left) consults with a Gulf Lubrication Engineer on the performance of Gulf Thread Grinding Oil on special setup for grinding thread gauges. (Photos courtesy of Allen Gauge & Tool Company, Pittsburgh, Pa.)

"GULF THREAD GRINDING OIL is doing an outstanding job for us," says the management of this shop. "We're not only getting better threads, but also greater production and fewer rejects on our precision gauges."

"Just as important to us is the fact that our operators prefer Gulf Thread Grinding Oil. They like it because it has no objectionable odor, does not irritate the skin, and does not mist."

Specially developed by Gulf technologists for use on automatic thread grinding machines, Gulf Thread Grinding Oil combines the qualities you need to do a faster, more accurate thread grinding job. This quality product has superior lubricating and cooling qualities, gives effective protection against rust, has no objectionable odor, is nontoxic, and nonfoaming.

Call in a Gulf Lubrication Engineer today and ask him to demonstrate conclusively how Gulf Thread Grinding Oil can help you improve production and thread quality. Write, wire, or phone your nearest Gulf office.

GULF OIL CORPORATION · GULF REFINING COMPANY

Division Sales Offices:

Boston · New York · Philadelphia · Pittsburgh · Atlanta
New Orleans · Houston · Louisville · Toledo

GULF INDUSTRIAL LUBRICATION

CAB Fixes Blame For PCA Accident

Collision of a Capital Airlines (PCA) DC-4 with a Blue Ridge Mountain top near Lookout Rock, W. Va., last June 13 probably was caused by faulty judgment on the part of both pilot and Washington, D. C., airway traffic control, according to a CAB accident report. Fifty persons were killed in the mishap.

Results of the Board's investigation generally agreed with findings made by Senate Investigator Carl Dolan early in October. CAB said the pilot descended below minimum en route altitude under weather conditions which prevented ground observation. A contributing cause of the mishap, CAB stated, was the faulty clearance given by Washington airway traffic control, tacitly approved by the company dispatcher and accepted by the airline pilot.

▶ **Plane Descending**—Airway traffic control's clearance authorized the pilot, who was then on instruments, to descend below 3,000 ft. (company minimum for that area) to 2,500 ft. or less in order to make contact and go into Washington contact. The pilot, accepting ATC's faulty clearance, dropped down through rain and fog to 1,425 ft. where the collision with the ridge occurred.

CAB investigation disclosed that although CAA had recently approved the use of airway red 61 from Marinsburg, W. Va., to Washington via Arcola, Va., it had not published any minimum altitudes for this airway. PCA had not put into operation minimum enroute altitudes for airway red 61, nor had it authorized its pilots to use this route.

▶ **CAA Criticized**—The Board observed that the whole subject of what are minimum altitudes and who prescribed them was in considerable confusion at the time of the accident. "This is evidenced," CAB said, "by the fact that a number of witnesses from the airway traffic section of CAA were unable to state who, if anyone, fixes such minimum altitudes and what effect follows upon their establishment.

"If one realizes the significance of minimums to airway traffic control, CAA's wisdom in approving a new airway for use without even publishing a minimum must be regarded as debatable. True, airway red 61 was immediately adjacent and parallel to airway red 20 (Martinsburg to Washington via Herndon, Va.) and presumably the published minimum of 3,000 ft. would be applicable to the former since the nature of the terrain underlying the two was essentially similar. But care for technical correctness in these matters is of highest moment."

Package Service

Monarch Air Lines has inaugurated a new air package service for shipments of prescriptions, films, dental plates, spectacles and other small items to residents of the Rocky Mountain area. The feeder will carry packages weighing up to three pounds anywhere on its system for 25 cents.

Companies desiring to use the service may paste a prepaid airbill to their parcels and take them to a central collection point where they will be picked up, sorted and dispatched on Monarch's next flight. The plan has been developed to provide inexpensive air transportation for packages too large to be sent at a reasonable cost by airmail and too small to ship economically under the $1 minimum air express fee.

ATA Renews Attack On Freight Forwarders

With a public hearing on the proposal slated for Dec. 8, the certificated airlines, through the Air Transport Association, late last month attacked CAB's suggested temporary exemption of freight forwarders as unwise and possibly illegal.

A letter written to the board by ATA president Emory S. Land, declared that proposed Economic Regulation 292, instead of being a new experiment as claimed, would be "trying practices both old and objectionable." He cited recommendations of the Coordinator of Federal Transportation and the Interstate Commerce Commission against freight forwarders in surface transportation.

Both these public agencies, Land emphasized, recommended that the direct carriers provide the services required by the public through their own organizations rather than through middlemen. The airlines, ATA told the Board, are carrying out that suggestion in the air transportation field with the assistance of their jointly-owned ground service organization, Air Cargo, Inc. "To allow forwarders to operate would only increase costs because it would bring in third parties, with their overhead costs, attempting to duplicate the complete services offered by the airlines themselves."

Another reason for not allowing forwarders to operate at the present time, according to Land, is that CAB should not invite additional persons into the air transportation business before it decides on their necessity. Before their activities commence, the Board will have difficulty deciding the pending freight forwarder case objectively, the ATA head declared. "The proposed temporary exemption would legalize the present operations of forwarders who have been acting in violation of the law, and it would prejudge the freight forwarder case."

Parks Asks Certificate For Feeder Operations

Parks Air Transport, East St. Louis, Ill., which was designated for 2,441 miles of feeder routes in CAB's Great Lakes and North Central Area cases contingent on a showing of adequate airport facilities, has asked the Board to issue a certificate.

The company told CAB it plans to institute service with DC-3s, although negotiations have been conducted for acquisition of a more suitable feeder plane. In requesting a certificate, Parks asked that it be issued in the feederline's new name—Parks Air Lines.

Meanwhile, Wisconsin Central Airlines, which also was designated for routes in the North Central Area decision and was certificated in October, plans to start operations with three 9-passenger Lockheed Electras around Jan. 1. Among the points to be served on initial flights are: Milwaukee, Clintonville, Wausau, Racine-Kenosha, Madison, Baraboo-Portage, Wisconsin Rapids-Stevens Point, Rhinelander and Oshkosh, Wis.; Minneapolis/St. Paul, St. Cloud and Chisholm-Hibbing, Minn.; Duluth, Minn.-Superior, Wis., and Chicago.

CAB SCHEDULE

Dec. 1. Oral argument on Board's investigation of Railway Express-Northwest Airlines airfreight agreement. (Docket 2340.)

Dec. 1. Hearing on Caribbean-Atlantic Airlines' mail rate case. (Docket 2210.)

Dec. 8. Hearing on Mid-Continent's application for alternate Kansas City-New Orleans route. (Docket 1956.)

Dec. 8. Special hearing before CAB on proposed classification, exemption and regulation of freight forwarders. (New section 292.6 of Economic Regulations.)

Dec. 10. Prehearing conference on New York area helicopter case. (Docket 946 et al.)

Dec. 15. Hearing on PCA's application for unrestricted service from Chicago to Cleveland, Akron, Youngstown and Pittsburgh. (Dockets 1789 and 1790.)

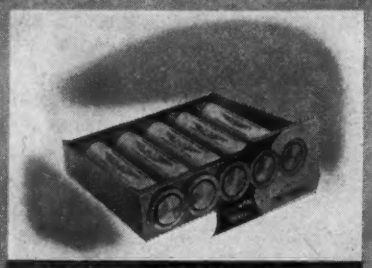
Jan. 5. Hearing on Board's investigation of Consolidated Airfreight Tariff Agreement. (Docket 2719.)

Jan. 6. Hearing on Taca, S.A., foreign air carrier permit renewal and amendment case. (Dockets 301 and 3017.)

Jan. 15. Hearing on requests of Braniff and Chicago & Southern for removal of restrictions on Chicago-Houston service. (Dockets 1081 and 1798.)

WHEN DANGER THREATENS

You'll appreciate these brilliant parachute flares—ready to light you to safety at the flip of a switch.



INTERNATIONAL FLARES

APPROVED EQUIPMENT FOR STINSON 150

Illustrated is a bracket of five (one-minute) parachute flares. Can be installed in any type plane for electrical operation. Available, also is the same class of flare to be operated with an international flare pistol.

75,000 candle power brilliantly illuminates the ground. Effective illumination at 1000 feet. Plenty of time and light to make an emergency landing.

International flares can be used to make night observations. Their use for this purpose frequently eliminates the necessity for a forced landing and prevents an accident.

Don't fly at night without International Flares. A complete line of landing flares meeting all C.A.A. requirements.

- 1-minute; 1½-minute and 3-minute electrically operated parachute flares
- 1-minute pistol operated parachute flares
- 3-minute manually operated parachute flares
- Signaling ammunition
- Aviation Flare pistols and signals

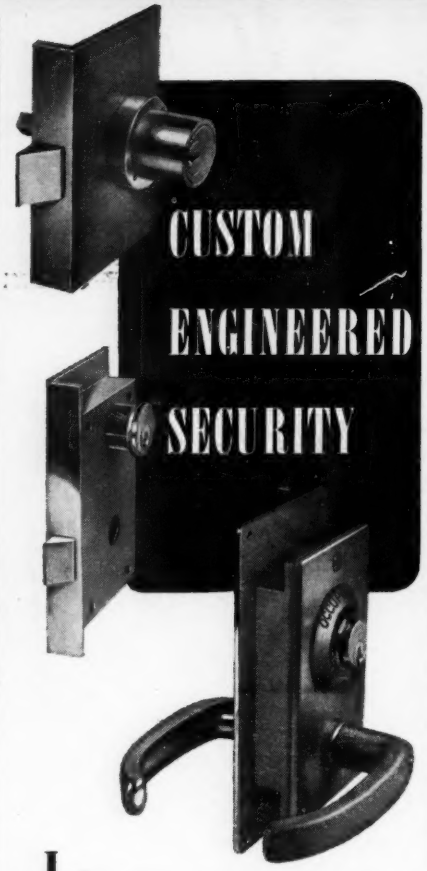
Write FOR DESCRIPTIVE LITERATURE

Priced from $90.00 to $230.00

KILGORE MFG. CO.

International Flare Signal Div.

WESTERVILLE, OHIO



IT'S Always something better at ADAMS-RITE. Locks and latches that secure fuselage, compartment, lavatory or bulkhead doors are especially designed here by lock specialists to fit the requirements of the product . . . rather than forcing a product to fit the restrictions of a standard model lock. For this reason, we are the acknowledged authority on aircraft latching devices . . . to the point of supplying 90% of such equipment in use on larger aircraft. The creative men at ADAMS-RITE offer to save you engineering and experimental time on your locking problem. Such assistance is yours for the asking whenever you need it.

QUALITY HARDWARE FOR NEARLY A HALF CENTURY

ADAMS-RITE MANUFACTURING CO.

540 WEST CHEVY CHASE DRIVE, GLENDALE 4, CALIFORNIA, U. S. A.

SHORTLINES

▶ **Aerlinte Eireann Teoranta**—The Irish carrier plans to inaugurate weekly service between Shannon, Ireland, and New York via Gander and Boston early in March if its pending request for a foreign air carrier permit is granted. Schedules would later be increased to two roundtrips weekly. Company now owns 5 L-749 Constellations.

▶ **Air France**—Reports it is now operating 132,128 route miles, or six times as many as in 1938, France's last prewar year. . . . Company revenue in August of this year reached 90.5 percent of expenses. . . . Present aircraft fleet includes 4 L-49 Constellations, 4 L-749 Constellations, 15 DC-4s, 3 six-motored Latecoere 631 flying boats, 30 DC-3s. 10 four-motored Languedocs, and three Catalina amphibians.

▶ **American Overseas**—Late last month flew its 100,000th passenger across the Atlantic.

▶ **Braniff**—Has informed CAB it will accept the 95 cents a plane mile temporary mail rate proposed by the Board last month for the carrier's Latin American operations.

▶ **Capital**—Showed an operating profit of $147,981 and net profit of $103,700 during October.

▶ **Eastern**—Has instituted service to Danville, Va.

▶ **Northeast**—Last month asked CAB for authorization to carry persons, property and mail over helicopter routes radiating out of East Boston, Mass., (Logan Airport) to Lynn, Peabody, Salem, Beverly, Haverhill, Lawrence, Lowell, Woburn, Waltham, Framingham, Dedham, Norwood, Walpole, Canton, Stoughton, Brockton, Whitman, Rockland, Quincy and the South Postal Annex in Boston.

▶ **Pan American**—Has been authorized to serve Munich, Germany.

▶ **Peruvian International**—Recently increased its New York-Lima, Peru, schedules from two to three weekly. . . . Company on Nov. 28 reduced air express rates about 25 percent on shipments of 100 lb. or over.

▶ **TWA**—Has discontinued its 25 percent penalty on "no-shows" who fail to cancel reservations prior to flight time.

▶ **United**—During the first 10 months of 1947 flew about 1,091,755,000 revenue passenger miles, up 20 percent over the same period last year. During October alone, UAL operated 141,969,500 revenue passenger miles, up 37 percent over October, 1946. . . . Company on Dec. 12 plans to cut air express rates to and from Hawaii by more than 50 percent on some commodities.

Calling all buyers

FIRST RATE AIRCRAFT COMPONENTS

From coast to coast, WAA Approved Distributors are selling choice, unused Aircraft Components at prices that are right. Thousands of general replacement parts, hardware items, tires and tubes, engines, engine parts, etc., are being offered.

These long-established Approved Distributors were selected by WAA on a basis of their recognized position in the aircraft industry, technical "know-how" and their ability to serve you efficiently. Write, phone or visit your nearest Approved Distributor and learn more about the variety and quality of the equipment which is available.

For your convenience, these Distributors are listed below. The numerals and letters indicate the type of equipment offered.

SAVE THIS ADVERTISEMENT

—IT SERVES AS A BUYER'S GUIDE

Abrams Instrument Co.
606 East Shiawassee Street
Lansing 5, Michigan
(aircraft cameras)

Aero Bolt & Screw Co.
1815 Webster Avenue
New York 57, New York
and—2457 Enterprise Street
Los Angeles, California
(6)

Air Accessories, Inc.
P.O. Box 1326
1400 Henderson Street
Fort Worth 1, Texas
(1,2cgh,5,6,10,11,12)

Air Associates, Inc.
Teterboro, New Jersey
and—416 Admiral Blvd.
Kansas City 6, Missouri
(1,6,10)

Air-America Supply Agency
1732 Eye Street
Washington 6, D.C.
(general—export only)

Aircraft Components Corp.
602 Montgomery Street
Alexandria, Virginia
(1,10)

Aircraft Engine and Parts Corp.
53 Park Place
New York 7, New York
(4xz)

Aircraft Hardware Mfg. Co., Inc.
810 Edgewater Road
New York 59, New York
and—2344 East 38th Street
Los Angeles 11, California
(1,6,11,12)

Aircraft Steel and Supply Corp.
415 North Water Street
Wichita 1, Kansas
(1,2e,11)

Air-Parts, Inc.
723 Sonora Avenue
Glendale 1, California
(1,3,4y,7,11,12)

Frank Ambrose Aviation Co.
39-01 Main Street
Flushing, L.I., New York
and
Oakland Municipal Airport
Oakland, California
(1,2g,10,11,12)

Aviation Activities, Inc.
1822 Republic Bank Building
P.O. Box 363
Dallas 1, Texas
(2[,4xz)

The Babb Co., Inc.
1007 Airway
Glendale 1, California
and—444 Madison Avenue
New York 22, New York
(1,3,5,9,10,11,12)

Chicago Airmotive Corp.
11 Industrial Rd.
Hammond, Indiana
(1,2ce,9,10,11,12)

Clary Multiplier Corp.
1524-90 N. Main Street
Los Angeles 12, California
(6)

Cobell Industries, Inc.
P.O. Box 966
401 South Lake Street
Fort Worth 4, Texas
and
North American Plant
Grand Prairie, Texas
(2g,3,4uyz,5,9,11,12)

Collins Engineering Co.
9041 Lindblade Street
Culver City, California
(6)

Douglas Aircraft Co., Inc.
Santa Monica, California
(2g)

Dumont Aviation & Supply Co.
1300 East Palmer Street
Compton, California
(6)

Durham Aircraft Service, Inc.
Northern Blvd. at Prince St.
Flushing, L.I., New York
and—Hangar #3
2000 North Memorial Drive
Tulsa, Oklahoma
and—2821 Brooklyn Ave.
Detroit, Michigan
(1,5,6,7,12)

Eagle Parachute Co., Inc.
933 East Orange Street
Lancaster, Penna.
(9)

Eighth Air Depot, Inc.
Hendricks Field
P.O. Box 507
Sebring 1, Florida
(1,2c,3,9,12)

Florida Aviation Corp.
Drew Field
Tampa, Florida
(1,2g,4tu,6,9,10,11)

Globe Industries, Inc.
44 West 44th Street
New York 18, New York
and—1431 Oregon Street
Berkeley, California
(1,9,11,12)

Goble Aircraft Specialties, Inc.
40-22 Lawrence Street
Flushing, L.I., New York
(1,4xz,9,12)

Hartwell Aviation Supply Co.
3417 Crenshaw Blvd.
Los Angeles 16, California
(electrical supplies)

C. J. Hendry Co.
27 Main Street
San Francisco, California
(6)

G. W. Holmes Co.
196-208 East Gay Street
Columbus 15, Ohio
(1,4twyz,9,10,11)

Jack & Heintz Precision Industries, Inc.
Cleveland 1, Ohio
and
Solon Road
Bedford, Ohio
(7)

Lamson & Sessions Co.
1971 West 85th Street
Cleveland 2, Ohio
(6)

Ladwick Industries
Ladwick Airport
Lakeland, Florida
(3,9,11,12)

S. A. Long Co.
232 North Market Street
Wichita 1, Kansas
(1,6,7,11)

Maxwell Associates, Inc.
15 Moore Street
New York 4, New York
(1,4z,10)

New Mexico Aircraft Sales, Inc.
P.O. Box 157
West Mesa Airport
Old Albuquerque, New Mexico
(1,8,10)

Pacific Airmotive Corp.
2940 North Hollywood Way
Burbank, California
and
1628 McGee Street
Kansas City 8, Missouri
(1,3,4tuvxz,6,7,9,10,11,12)

Page Airways, Inc.
Municipal Airport
Rochester, New York
(1,2e,4tu,10,11)

Clarence E. Page
Hangar #3, Municipal Airport
Oklahoma City, Oklahoma
(1,2ce,3,4u,10,11,12)

Parker Service Agency Division
The Parker Appliance Co.
17325 Euclid Avenue
Cleveland 12, Ohio
and
6506 Stanford Avenue
Los Angeles, California
(6—Parker fittings)

Piedmont Aviation, Inc.
Smith-Reynolds Airport
Winston-Salem 1, North Carolina
(1,4u)

Pioneer Parachute Co., Inc.
Forest Street
Manchester, Connecticut
(9)

Ranger Aircraft Engines
Div. of Fairchild Engine and Airplane Corp.
Farmingdale, L.I., New York
(4y)

Reid & Cook, Electrical Contractors
911 Walla Walla Avenue
Renton, Washington
(1,6,8,10,11)

Resort Airlines, Inc.
P.O. Box 1301
Southern Pines Airport
Southern Pines, North Carolina
(1,2e,10,11)

Schneck Engine Service & Supply
Washington Park Airport
Homewood, Illinois
(1,2h,4uy,10,11)

Schuster Electric Co.
321 Sycamore Street
Cincinnati 2, Ohio
(electrical supplies)

Snyder Aircraft Corp.
5036 West Sixty-third Street
Chicago 38, Illinois
(1,4t,7)

Thor Solberg Aviation Co.
Solberg-Hunterdon Airport
Whitehouse, New Jersey
(1,2h,10,11)

Stanco Company
1914 Canton Street
Dallas 1, Texas
(6)

Standard Parts & Equipment Co.
904 North Main Street
Fort Worth, Texas
(1,6,8,11)

Supply Division, Inc.
Lambert Airport
Robertson, Missouri
(1,6,7,9,11)

United Aero Service, Inc.
P.O. Box 1028
Delta Air Base
Charlotte, North Carolina
(1,2bceh,4tuz,7,10)

United Services for Air, Inc.
Box 409
Niagara Falls, New York
(2f)

Van Dusen Aircraft Supplies, Inc.
2004 Lyndale Avenue—South
Minneapolis 5, Minnesota
(1,4uwy,6,9,10,11,12)

Wallace Air Service, Inc.
P.O. Box 2203
Felts Field
Spokane, Washington
(1,2ce,4tuw,10)

Woodward Bros. Co., Inc.
9175 East Douglas Avenue
Wichita 1, Kansas
(1,6)

KEY TO SYMBOLS

1. Accessories
2. Airframe Parts
   - (a) Aeronca
   - (b) AT-19
   - (c) Beech
   - (d) Boeing
   - (e) Cessna
   - (f) Curtiss
   - (g) Douglas
   - (h) Fairchild
   - (i) North American
   - (j) PBY
3. Engines
4. Engine Parts
   - (t) Continental
   - (u) Jacobs
   - (v) Kinner
   - (w) Lycoming
   - (x) Pratt & Whitney
   - (y) Ranger
   - (z) Wright
5. Ground Handling Equipment
6. Hardware
7. Instruments
8. Miscellaneous
9. Parachutes
10. Propellers
11. Tires and Tubes
12. Tools and Test Equipment

OFFICE OF AIRCRAFT AND ELECTRONICS DISPOSAL

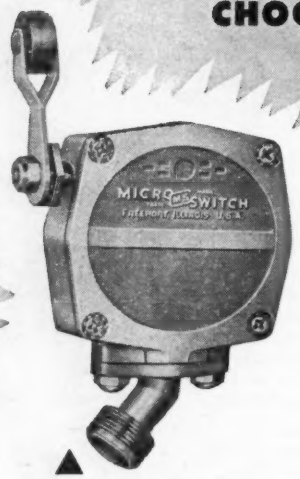
WAR ASSETS ADMINISTRATION

GOVERNMENT WAA SURPLUS

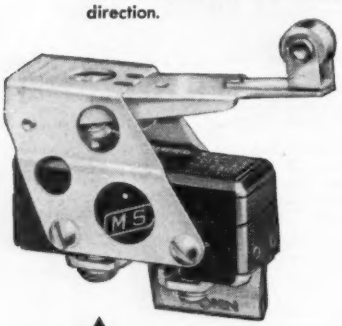
1375

CHOOSE YOUR SWITCH REQUIREMENTS FROM THE COMPLETE "MICRO" LINE

Varied Shapes — Sizes — Actuators and Capacities



▲ MICRO LMR Aircraft Switch has sturdy die cast aluminum housing. Mounting holes make possible four position mounting on either face. Rotary lever arm actuator is adjustable through 360 degrees. Total travel of roller arm is 90° in either direction.



▲ MICRO Precision Switch Actuator Type AD5721R—This auxiliary actuator is a side mounted roller lever type for use with "pin" plunger basic switches for fast cams or slide operation.

MICRO Precision Switch Type MC7711 provides 7/8" overtravel and convenient means for mounting through panels and locking. ▼

• The complete line of snap-action switches made by MICRO Switch offers 3,365 varieties of shapes, sizes, weights, actuators and electrical characteristics so necessary to meet varied requirements. The "Know-How" gained by making this extensive line has resulted in outstanding dependability and long-life operation. The completeness of the line has made it desirable to meet requirements of design engineers.

Exact repeatability of operating point is an outstanding feature which is a result of carefully controlled manufacturing methods. You can depend upon a MICRO Precision Switch to operate at the same point each time throughout the life of the switch. This perfection is the result of wide engineering experience.

Call on the Know-How of "MICRO" engineers.

The V3-1 MICRO Precision Switch is No Larger Than Your Thumb but Big and Dependable in Performance

Suitable for those spaces where limited space is available. It has a plastic case, is light weight and is durable. Terminals are heavy gauge brass with number 4 terminal screws and lock washers.

MICRO *Precision Switches*

©1947, First Industrial Corp.

BRANCH OFFICES

CHICAGO 6.....308 W. Washington St.
NEW YORK 17.....101 Park Avenue
CLEVELAND 3.....4900 Euclid Avenue
LOS ANGELES 14.....1709 West 8th St.
BOSTON 16.....126 Newbury Street

MICRO MS SWITCH
A DIVISION OF FIRST INDUSTRIAL CORPORATION
FREEPORT, ILLINOIS, U.S.A.

SALES REPRESENTATIVES

PORTLAND, ORE.....917 S. W. Oak Street
ST. LOUIS 5.....6625 Delmar
TORONTO, Ontario, Can.....11 King Street

Anti-Cholera Measures Curtail Air Operations

CAIRO—Civil aviation in Cairo for the past month has been going through readjustment because of schedule and route changes necessitated by cholera restrictions. Changes in Cairo have been influenced by restrictions in other countries.

TWA found it necessary to alter only a few schedules. The line transferred four of its 23 Cairo-based crews to Lydda, Palestine, as a precaution in case additional countries should forbid persons who had been living in Egypt to land on their soil.

▶ **Restrictions Force Changes**—Changes were due mainly to rigid anti-cholera restrictions in Saudi Arabia, where TWA does a large business. That country forbids entry of any planes, crews or passengers from Egypt. Many TWA planes normally fly from Dhahran, Saudi Arabia, and it became necessary to over-fly Cairo and base crews at another point. Cairo, normally big junction and transfer point, is comparatively quiet.

A TWA official found it difficult to say what effect the epidemic had had on air business, since it broke out while financial restrictions imposed last July also were having an adverse influence. But there has been a general slump in traffic in Egypt.

A number of Middle-East airlines such as Misr, Ethiopian, Iranian, Iraqi, Saudi Arabian and Swedish Airlines formerly fed TWA a sizeable business. All these have suspended their services to and from Cairo for the time being.

▶ **Requirements Rigid**—Difficulties were experienced in Greece, where passengers or crews of any line originating in Cairo rather than Lydda would have been detained in quarantine for five days on an island off Athens. Greece closed her frontiers Nov. 1 to any flights originating in Egypt or India.

Italian health authorities have ordered all passengers arriving by plane (or ship) from Egypt to report to health offices for five consecutive days. Most countries—France, for instance—require innoculation certificates from passengers originating in Egypt. Spain will not accept Cairo flights between 9 p.m. and 6 a.m. because its airport quarantine officers are not on duty then.

Because of cholera, BOAC has suspended flights from Cairo to Istanbul, Cairo to Addis Ababa (last stop Asmara at present) and Cairo to Jedda, Saudi Arabia. Flying boats in transit through Egypt are not allowed to land in Basra (Iraq) and have to fly to Bahrein, island in the Persian Gulf off Saudi Arabia. No BOAC aircraft from Egypt is allowed to land in Palestine, Lebanon, Syria, Iraq, Turkey or Greece.

SEABEE HALFWAY AROUND THE WORLD

Calcutta, India, has been doing a double-take at the skies recently. Accustomed to seeing BOAC flying boats passing overhead, it is now getting used to a comparative vest-pocket counterpart in the form of this Republic Seabee. A sales demonstrator, is shown during taxiing tests at Calcutta's marine air terminal at Bally, on the Hooghly River. Craft was check flown by Hindusthan Airways Ltd., aircraft sales company and agent for it, Grumman Mallards, Luscombes and Navions. W. B. Ridley, former RAF Wing Commander, is general manager of the firm, which is backed by a group of Calcutta industrialists and has a paid-up capital of $300,000. (World Newsphoto)

$10,000,000 Airport Is Bangkok Prospect

BANGKOK—Bangkok has prospects for construction of another $10,000,000 airport with study by the Ministry of Communications of an offer by the Far East Airport Co., an American firm, to build a modern commercial field for this amount.

The company also is bidding on a contract for repair of the Don Muang runways now in use, which will be about a 30 million baht ($3,066,000) job. (The baht in the open market is worth about 5 cents while the official rate is 10 cents).

The U. S. firm asks that special concessions in the collection of landing fees and other matters be considered for the company for a limited period.

▶ **Facilities Separation**—Preliminary approval of the proposal is being given, it is understood, because of the desire to have separate air force and commercial aviation facilities. Clark M. Kee, a specialist in aerodrome construction, is now in Bangkok representing Far Eastern.

The present construction program at Don Muang entails extension of runways to 2,200 meters, capable of taking 100-ton planes. The largest planes now coming in are Constellations, but it is expected that Stratocruisers will be routed through here later. An average of 20 commercial planes is using Don Muang daily.

▶ **Financial Support Promised**—Equipment worth a quarter million dollars and weighing about six thousand tons would be brought here from the United States. New York financial circles have promised support for the project.

After the new airport had been operated for a period of time to be agreed upon with the Siamese government, it would be turned over to the government free. Basic cost of construction would be 100 million baht but the putting up of the latest lighting system, the building of a hotel and recreational grounds for transit passengers and the construction of a small airport town would roughly cost another 100 million baht.

THE HORSE AND BUGGY DAYS ARE GONE!

NOW the most MODERN PRECISION EQUIPMENT available

for Accessory Repair

Also FINE INSTRUMENT REPAIR

DIAL PAINTING

DISTRIBUTOR and AUTHORIZED SERVICE for ECLIPSE — PIONEER

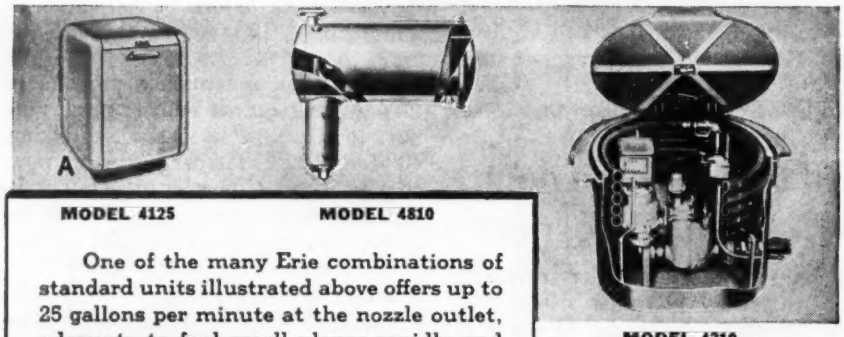
C.A.A. APPROVED STATION NO. 2783

DISTRIBUTORS OF AVIATION SUPPLIES

The S. A. LONG CO., Inc.

650 EAST GILBERT • WICHITA 1, KANSAS

ERIE FUELING at Small Airports



MODEL 4125 MODEL 4810

One of the many Erie combinations of standard units illustrated above offers up to 25 gallons per minute at the nozzle outlet, adequate to fuel small planes rapidly and efficiently. The cabinet type Pumping Unit (A) may be located above or near the underground tank while the Erie Gasoline Dehydrator and JR Fueling Pit are installed below ground with the Fueling Pit located for fast service—the 36 ft. hose will suggest the best fueling point. For complete details on this system and several others, write to our Airport Fueling Division.

MODEL 4210

Erie builds Flight-Fuelers with and without pumping units, Remote Controlled Cabinet type Pump Units, Submerged Turbine Pumps, Gasoline Dehydrators, JR and SR Pit Units and Hydro-Couple Fueling Outlets, all in a range of sizes to meet any Airport Fueling demand.

Look to ERIE

ERIE METER SYSTEMS, INC.

Main Office and Plant: Erie, Pa.

Stockholm Letter:

Weather, Politics Felt In Swedish Aviation

STOCKHOLM—The whole Swedish nation was shocked and perturbed recently by the disaster which overtook ABA's DC-4 "Sunnan." Apart from losses during the war, only one passenger life had been lost by the Swedish airlines since ABA was founded in 1924.

No definite clue to the accident has been found. All on board were killed when the plane, homeward bound from Istanbul, crashed in a thunderstorm on a ridge of the Hymettos range east of Athens airport.

The Swedish airlines have made their service as safe as possible. Planes straight from the makers have been partially rebuilt to a more stringent safety standard. Full crews rather than extra passengers have been the rule.

The company's policy already has paid dividends in Mediterrean lands. ABA planes have been booked full, in contrast to those of other lines. But this was a postwar development, ABA men were always careful to point out that their previous record had been created north of the Alps, over mountainless country. There still seems no foolproof solution to the combined hazard of mountains and bad weather.

* * *

Climate and geography are not the only factors making themselves felt in Swedish commercial aviation. Politics are there, too. Because the Swedes voted against the Spaniards in the ICAO, ABA flights to Barcelona and Madrid have stopped. The Swiss, who refrained from voting, can take over the traffic. . . . Daily scheduled flights Stockholm-Helsinki have been resumed, having been broken off since March after a fitful start last winter. Two flights each way are by ABA, and one by the Finnish Aero O/Y. Priority is given Moscow passengers on the flights making alternate day connections with Aeroflot's line. . . . The Finnish DC-3 which initiated the service Nov. 3 was the first plane to leave Finland on a scheduled flight since the war. Following the signing of Finland's peace treaty, an air convention has been reached between Sweden and Finland. . . . The Finns have five DC-3s, two DC-2s, and a couple of old Ju-52s.

* * *

Domestic question most exercising aviation circles in Sweden is the proposed unification of the privately owned SILA company and the almost entirely government owned ABA airlines. Admittedly SILA—and for that matter, the whole SAS combine—is highly depend-

ent still on ABA's excellent maintenance department, but this looked like nationalization for the sake of nationalization.

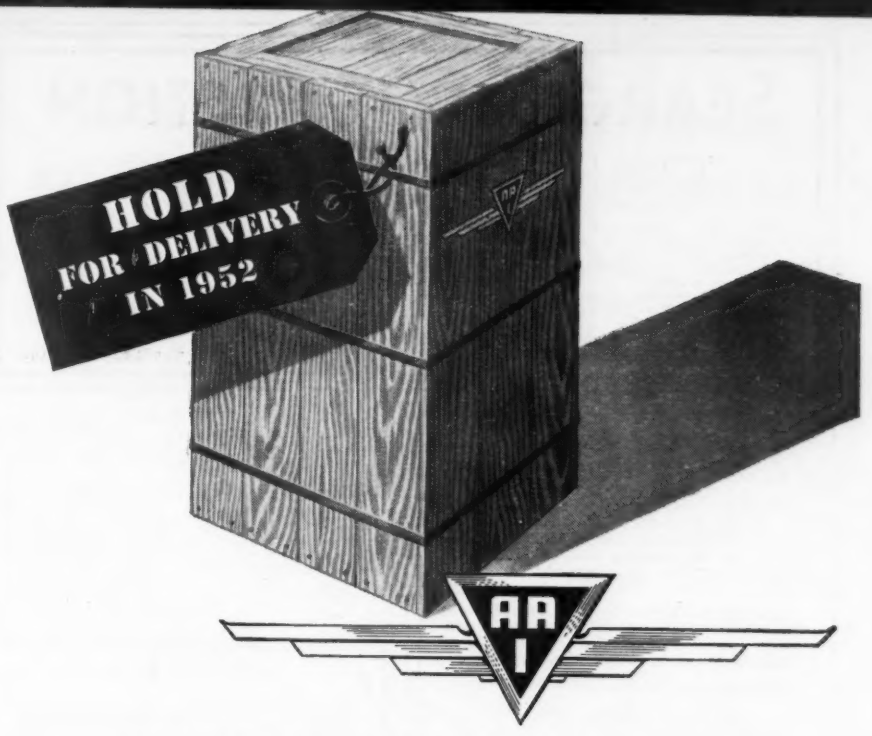
When SILA was planned during the war, the government refused to have anything to do with it, on the ground that trans-Atlantic traffic could never pay. Consequently the enterprise was started entirely with private Swedish capital, which also guaranteed orders placed in behalf of the Danes and Norwegians. The North Atlantic route is already a paying proposition, and only lack of planes and flying personnel is holding South American service.

Now the government is more interested in trans-Atlantic flying, and the first proposal was that 51 percent of the shares in the unified company should be government owned. The original backers of SILA could hardly agree to that however, and a 50-50 settlement has been reached. As the government appoints the chairman of the board, it is presumed that private interests have been further safeguarded in a manner not yet revealed.

Financially, the deal involves shifting 6 million kronor of a 12 million kronor public loan from SILA to the government, giving each side a 30 million interest in the new company. Interesting is that while ABA has had to borrow 20.5 million kr. from the Treasury to buy 10 DC-6s, SILA has continued to arrange its own finance for two Stratocruisers and three DC-6s.

* * *

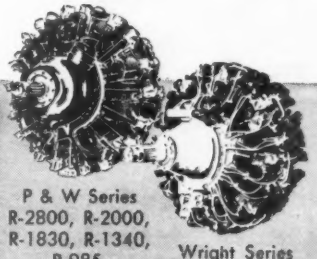
How many of the new two-engined Scandia planes the Swedish airlines are buying is still unknown. Dollar shortages may give the SAAB company an advantage over Douglas not only in Sweden, but in Europe generally. The Dutch are mentioned particularly as being interested. Much depends on whether sufficient orders can be obtained to bring down the price. . . . Abyssinia seems to offer a steady market for Swedish airplane exports—latest sale is 16 light bombers (B-17s), surplus from the Swedish Air Force, also of SAAB manufacture. Six SAAB Safirs, for training and scout purposes, were recently purchased direct from the manufacturer. One of these 3-seater, 45 hp. planes was flown non-stop Stockholm-Addis Ababa, nearly 4,000 miles, in 31 hours by Count Carl Gustaf von Rosen, a Swede who is now building up the Abyssinian air force. . . . Nov. 11 marks the completion of two years of long distance flights by the Scandinavian missionary plane "Ansgar." During the period some 800 missionaries have been carried between Scandinavia and their various fields in Africa and the Far East. The activity is unusual on account of the long distances regularly flown. —G. Howard Smith



Aviation Activities, Inc., has become a part of the international aviation picture—a *permanent* part. Your order for Wright and Pratt & Whitney engine parts will be filled tomorrow—or five years from tomorrow, as you wish. • This is just another way of saying that there is nothing of the "get in and get out" point of view at Aviation Activities—the flying AAI insigne is *here to stay!*

• Today, Aviation Activities offers you a full stock of new, perfect parts for Wright and Pratt & Whitney engines...every part meticulously inspected by CAA licensed inspectors and packed for long storage, properly labeled by part number and quantity...ready for immediate shipment...*at substantial savings to you!*

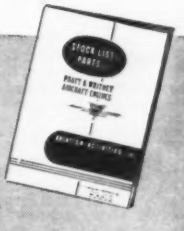
• You can bank on the "know-how" of AAI personnel —men who know from personal experience your problems of line maintenance, overhaul, procurement and operation. Let them help you!



P & W Series
R-2800, R-2000,
R-1830, R-1340,
R-985

Wright Series
R-3350, GR-1820

Write or wire today for current "Stock List of Parts," listing available parts. Specify whether for Wright engines, P & W engines, or both.



AVIATION ACTIVITIES, Inc.
Serving the Air Lines of the World

Republic Bank Building Dallas, Texas, U.S.A. Cable: AVIACT, Dallas, Texas

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT : BUSINESS : "OPPORTUNITIES" : EQUIPMENT : USED OR RESALE

UNDISPLAYED ——RATES—— DISPLAYED

60¢ a Line. Minimum 4 Lines. To figure advance payments count 5 average words as a line.
Positions Wanted (full or part time individual salaried employment only) ½ the above rates payable in advance.
Box Numbers—Care of publication New York, Chicago or San Francisco offices count as 1 line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Individual Spaces with border rules for prominent display and advertisements.

The advertising rate is $9.00 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

AVIATION WRITER - EDITOR

National aeronautical magazine seeks far above average writer competent to handle technical aspects of aviation. Must be young, aggressive, full of ideas and able to carry out wide variety of assignments.

Applicants may write in full confidence and must include all details of their education, experience and war record. Small photo should accompany application.

Our staff knows of this advertisement.

P-3112, Aviation Week
330 W. 42nd St., New York 18, N. Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

AERONAUTICAL ENGINEERS: Structural Engineers, Aerodynamicists, and Layout Engineers having at least four years aircraft experience in addition to college degree are urgently needed by large eastern manufacturer. Consideration will also be given to aircraft engineers interested in all phases of design and test engineering. In letter of application please give detailed account of your aircraft experience as well as other pertinent data you feel will assist us in fully and promptly considering your application. All replies will be held strictly confidential. Apply Employment Manager, Fairchild Aircraft, Hagerstown, Maryland.

WANTED—A Freight Traffic man capable of assembling and analysing air freight tariffs for air freight operating lines: State Traffic experience in surface and air transportation and salary to start. P-3127, Aviation Week.

POSITION WANTED

YOUR FIRM needs this experienced 31 year old veteran. Commercial pilot with flight examiner rating. Former airing instructor and seaplane base operator. Nine years flying land and sea plus ten years as research machinist-toolmaker, chief inspector. Location no objection. Available immediately. PW-3037, Aviation Week.

BOOKS FOR SALE

Nearly complete file
of I.A.S. Journals, 1937 to 1947. Also 100 N.A.C.A. Technical Reports. Will accept reasonable offer. BFS-3129, Aviation Week.

FOR SALE

1946 Beechcraft D-18S
complete equipment. Less than 300 hours. Condition like new; UHF, ADF, de luxe pilot chairs, reasonable price. New York Aviation Corp., 5 W. 46 St., New York, N. Y.

Cessna heavy wing just relicensed,
newly majored engines fabric tested okay, lights and flares, extra tank, beautiful interior and exterior. ADF, marker range receiver, Lear transmitter, Lear 3 hand receiver with loop and speaker. Under 780 hours total. Attractively priced. Trades considered. New York Aviation Corp., 5 W. 46 St., New York, N. Y.

Twin-Engine Cessna—
Maroon and Silver—complete recover job—just relicensed—Hamilton Standard Constant Speed Props. At the time of recovering all woodwork was gone over and revarnished. Cabin completely sound-proofed—two-way Army converted radio—leather seat cushions. Over 400 hrs. on engines. Will accept best offer between now and Christmas. New York Aviation Corp., 5 West 46 St., New York, N. Y., Longacre 3-6515.

FOR SALE

DC-3, 21 passenger,
2 new P&W spare engines. Howard-15P now being converted. AT-6, painted and licensed. Twin Cessna-100 hours since engines and props were new, cost $26,000. Piper 1947 Cruiser only 33 hours, blind flight group. AT-11 Twin Beech, 7 passenger conversion, less than 100 hours on engines since major. 2-AT-19 Stinsons, like new, low time, new licenses. All ships can be seen at our hangars. Commercial Aircraft, Inc., Willow Run Airport, P.O. Box 450, Ypsilanti, Mich.

ATTENTION:

MR. SALES MANAGER

Midwestern independent sales representative with executive airline and aircraft contacts desires to represent manufacturer. Prefers territory east of Mississippi and north of Mason-Dixon line.

References from purchasing and engineering executive personnel. All inquiries promptly answered and held confidential.

RA-3031, Aviation Week
520 North Michigan Ave., Chicago 11, Ill.

BEECH HIVE

ATLANTIC'S facilities were conceived specifically to serve corporation planes and discriminating owners. Little wonder that ATLANTIC is the New York home-away-from-home for Beechcrafts from all over the country. Beechcraft and Bendix Radio sales and service.

Atlantic Aviation CORPORATION
TETERBORO AIRPORT
TETERBORO, N. J.
PHONE: HASBROUCK HEIGHTS 8-1740

CURTIS SERVICE INC.

AIRPORT AUTO RENTAL

1947 Ford Sedan Cars are now available for the use of the flying public at each of these California Airports. Reserve in advance if possible.

- **GLENDALE** Grand Central Air Terminal, Curtis Service, Inc., 1096 Airway, Telephone Chapman 5-3061
- **LOS ANGELES** Central Airport, 13610 South Central Ave., Telephone Nevada 6-1422
- **SANTA BARBARA** Santa Barbara Munic. Airport, Robinson's Aviation Services, Telephone 8-5301

PROFESSIONAL SERVICES

LANCASTER, ALLWINE & ROMMEL
Registered Patent Attorneys
Suite 452, 815-15th St., N.W., Washington 5, D. C.
Patent and Trade-Mark Practice before U. S. Patent Office. Validity and infringement Investigations and Opinions.
Booklet and form "Evidence of Conception" forwarded upon request.

AIRCRAFT CONSULTING SERVICE
Engineering, Economic & Business Consulting in Airline Operations, Aircraft Manufacture & allied activities. Fiancial, Management and Industrial Surveys.
H. E. Weihmiller, Director Executive 7203
402 Hibbs Bldg., Washington 5, D. C.

PETER ALTMAN
ENGINEERING CONSULTANT
Analysis — Design — Surveys — Testing
5057 Woodward Ave. Detroit 2, Mich.
Tel. TEmple 2-0400

SCHOOLS

Rising Sun SCHOOL OF AERONAUTICS
ESTABLISHED 1930
"Built Upon the Success of Its Graduates"
GOVT. C.A.A. and VETERANS APPROVED
ENROLL NOW FOR NEXT CLASS
Write for Illustrated Catalog.
2206-16 E. HUNTINGTON ST., PHILA., PA.

Kollsman Magnetic Compasses

Type B-16
Price $14.95 each

Approach Indicators — I. D. — 24/ARN-9
Price $4.95 ea.
Inverters — Pioneer Bendix type 12123-1-A
Price $49.50
Instrument Lamps — Mazda #323
Price $22.00 per C
All prices f.o.b. Tuckahoe, New York

ELECTRONICRAFT, INC.
5 Waverly Place, Tuckahoe 7, New York
Phone — Tuckahoe 3-0044

SEE US FOR
APPROVED REPAIR STATION 188
SAE INSTRUMENTS
NEW — USED — ALL TYPES — SALES — REPAIRS
STANDARD AIRCRAFT EQUIPMENT COMPANY
Hangar 35, Roosevelt Field, Mineola, L. I., N. Y. Garden City 8753

FOR SALE
BY
AMERICAN AIRLINES, INC.
43-02 Ditmars Blvd.
Astoria, L. I., New York

• • •

- Douglas DC-3 Airplane Parts, Accessories and Ground Equipment.
- Wright G-102 (C9GB) Engine Parts, Accessories and Components.
- P&W R-1830-92 Engine Parts, Accessories and Components.

• ALSO •

- Douglas DC-4 Airplane Parts and Accessories.
- P&W R-2000-13 Engine Parts. Accessories and Components (many of which are interchangeable with R-2000-7-9-11 Engines).

—◇—

These inventories are available for inspection at our warehouses at Astoria, L. I., New York, Tulsa, Oklahoma and Fort Worth, Texas and offered FOB these points for domestic shipment at very attractive prices.

PROMPT ATTENTION WILL BE GIVEN TO ALL REQUESTS FOR QUOTATIONS DIRECTED TO THE ATTENTION OF THE SUPERINTENDENT OF STORES AT THE ABOVE ADDRESS

SURPLUS
Jacoel
Cable Splicer

Production type will accommodate thimbles or bushings from 1/16th of an inch to 5/16ths, in diameter of cable. Prices greatly reduced for *quick sale.*

Jacoel Cable Splicing Equipment Co.
Department A
1109 South Broad St.
Philadelphia 47, Pa.

FOR SALE

2 Never Flown 1946 ERCOUPES
New Guarantee in every respect—$2850.00
1—1946 ERCOUPE—400 hours Low Time Since Major—$2250.00
2—1946 ERCOUPES—100 hours With Radios - - $2450.00

All of above airplanes can be financed.

THE TRACTOR SALES CORP.
1409 Santa Fe Ave., Los Angeles 21, Calif.

EXHAUST COLLECTOR RING ASSEMBLIES

DOUGLAS PART #5115224 (C-47) NEW

JOHN N. HOWARD
P. O. Box 956, Coral Gables, Fla.

AIRCRAFT PARTS, ASSEMBLIES, COMPONENTS and ACCESSORIES

Available for Immediate Delivery from Stock

ALCOHOL PUMPS
744-4, 744-6, 565-3
D-13382, D-7818, 100-4

AUTOMATIC PILOTS
A3, A3A, A5, C1

CARBURETORS
PD-12F2, PD-12F5,
PD-12H2, PD-12K6,
PT-13G1, PT-13G5,
1900-CPB-3

C-47, DC-3, C-54, DC-4
PART & ASSEMBLIES

Bungee-DC-3-2116965
Collector Rings-DC4
5174842 & 5174529
Eng. Mount Bolts—DC3
1116115, 1117771
Int. Wrench, Bolts—DC3&4
2076904 thru 2076907 Ser.
NAS-140 thru NAS-150 Ser.
Landing Gear Bolts—DC3
AN14-93, 1116409,
1116410, 1116955,
1117078, etc.
Special Screws—DC3 & 4
1027300 & 1027307 Ser.
1027997 & 1029421 Ser.
1029679 & 124630 Ser.
Shear Bolts—DC3 & 4
111904 Ser. all Dash Nos.
Shock Mounts—DC-3
SK1292-1, 1118876, etc.
Special Bolts—DC3
1000402, 1046452,
1117059, 1131032,
1139096, 1143386,
1143538, 1205414,
134808, 2116354, &
all dash Nos.
Special Washers—DC3 & 4
1075888, 124682 &
143908 Series.
Window Assemblies—DC3
5115404 & 5115404-1

ELECTRONICS
BC-221, BC-357,
BC-733D, BC-1206,
BC-438, SCR-269,
SCR-274, etc.

ENGINES—at Min. Prices

0-435-1	R1820-G205
R680-9	R1830-43
R755-9	R1830-65
R985-48	R1830-90C
R985-50	R1830-92
R985-AN-1	R2600-13
R985-AN-3	R2800-43
V1710-81	R2800-51
V1710-99	R2800-75
R1820-97	R3350-35

FUEL PUMPS
G-9, G-10, TFD-100,
TFD-8100, TFD-8200,
CH4103-23, Ceco 9103.

GENERATORS
M2, 0-1, P-1

INSTRUMENTS
Comp. Inventory of all types, incl.
Driftmeters B-3 & B-5.

INVERTERS
MG-149, MG-149F,
MG-149H, MG-153,
and MG-153F.

MAGNETOS
SF14LU-7 & SF14LU-8
SF14LC-7 & SF14LC-8
SF9LU-3, -7 & -8
SF14LN-8, etc.

OXYGEN EQUIPMENT
A9, A8, A12, & AN6022 Regulators.
G1, D2, F1, & A4 Bottles
K1. & A-13 Gauges.

PROP. FEATHER. PUMPS
54772-2, 54772-21, 1E280,
1E521, etc.

PROP. GOVERNORS
4G8-G23G, 4G8-G15,
4G8-G13, 4L1-GIJ,
4K11-GOJ, 4K11-GOL.

STARTERS
G-6, G-6A, E-80, F-2,
JH-3R, JH-4ER,
JH-5F, JH-5-B, etc.

VACUUM PUMPS
3P207JA, 3P211JA.
119626-610-2

VALVES
3V-216H, 3V-217H,
613-2, 613-6, 557-5, etc.

WINDSHIELDS—PLEX
For Aeronca, Cubs, Taylorcraft, Stinson, Culver Cadets, Luscombes, etc.

H. & E. DISTRIBUTING CO., INC.

OKLAHOMA CITY OKLAHOMA

Adm. Offices:
P. O. Box 3596
Ph: 4-5109

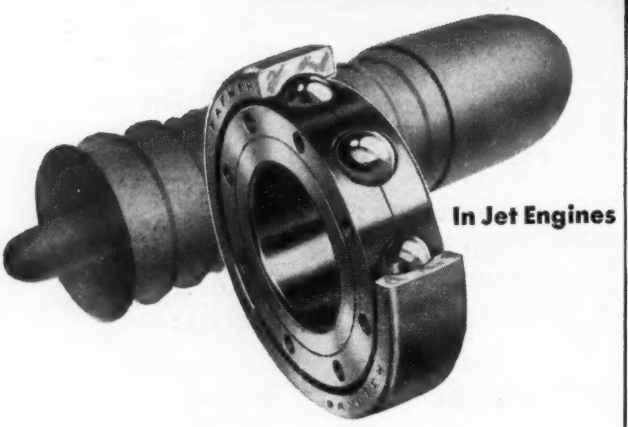
Warehouses:
4025 N. Barnes
Ph: 5-9617

Write for our Catalogs, and Address all Inquiries to Administrative Offices

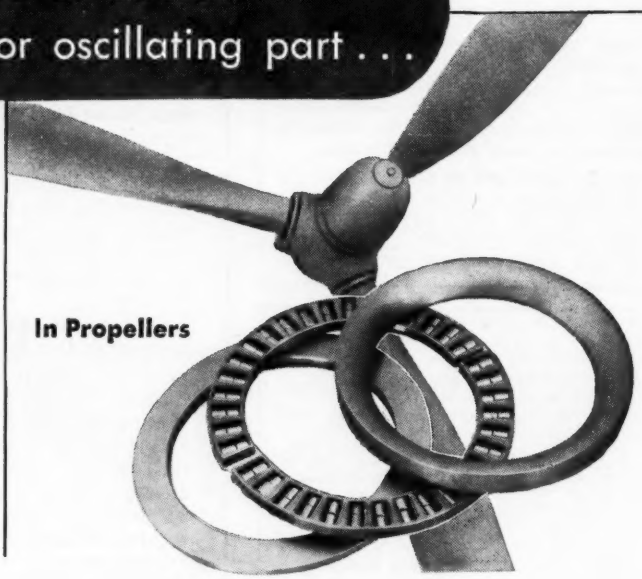
In Helicopters

In Airframes

for every type of aircraft . . .
in every rotating or oscillating part . . .



In Jet Engines



In Propellers

LOOK TO FAFNIR for continuing leadership

in the development of Ball Bearings for Aircraft!

• Twenty years ago Fafnir pioneered the development of ball bearings for the aviation industry. A specialized Engineering and Sales Department was created to work closely with aircraft and component part manufacturers.

That record of leadership stands unchallenged today.

This teamwork has resulted in the development of most of the special ball bearings and accessories generally accepted by the industry today.

Working with the most complete line in America, Fafnir engineers are in a preferred position to team up with aircraft designers and engineers to solve any bearing problem. The Fafnir Bearing Company, New Britain, Conn.

FAFNIR
BALL BEARINGS
for Aircraft

ADVERTISERS INDEX

AVIATION WEEK

DEC. 1, 1947

Adams Rite Mfg. Co. 48
Agency—Sylvester-Meeder Adv. Corp.
Allen Mfg. Co., The 8
Agency—Norris L. Bull Adv.
Aviation Activities, Inc. 53
Agency—Rogers & Smith Adv.
Beech Aircraft Corp. ..... Fourth Cover
Agency—Erwin, Wasey & Co., Inc.
Bendix Aviation Corp. (Scintilla Magneto Div.) 57
Agency—MacManus, John & Adams, Inc.
B. G. Corporation, The ..... Front Cover
Agency—Albert Frank Guenther Law, Inc.
Bower Roller Bearing Co. 29
Agency—MacManus, John & Adams, Inc.
Chicago Rawhide Mfg. Co. 27
Agency—Wesley Aves & Associates
Electric Auto-Lite Co., The 36
Agency—Ruthrauff & Ryan, Inc.
Electric Storage Battery Co., The 10
Agency—Geare-Marston, Inc.
Erie Meter Systems, Inc. 52
Agency—Davies & McKinney Industrial Adv. Agency
Fafnir Bearing Co., The 56
Agency—Horton-Noyes Co.
General Electric Co. (Apparatus Dept.) 22
Agency—G. M. Basford Co.
Goodrich Co., The B. F. 3
Agency—Batten, Barton, Durstine & Osborn, Inc.
Gulf Oil Corporation 46
Agency—Young & Rubicam, Inc.
Keuffel & Esser Co. 4, 19
Agency—St. Georges & Keyes, Inc.
Kilgore Mfg. Co. 48
Agency—Byer & Bowman Adv. Agency
Long Co., Inc., The S. A. 52
Agency—The McCormick-Armstrong Co.
Lord Manufacturing Co. 41
Agency—W. S. Hill Co., Inc.
Marquette Metal Products Co. 42
Agency—Belden & Hickox Adv.
Micro Switch Corp. 50
Agency—Hamilton Adv. Agency, Inc.
Permanente Products Co. 6
Agency—Young & Rubicam, Inc.
Pesco Products Co. 35
Agency—Fuller & Smith & Ross, Inc.
Phillips Petroleum Co. 32
Agency—Lambert & Feasley, Inc.
Pittsburgh Plate Glass Co. (Safety Glass) 9
Agency—Batten, Barton, Durstine & Osborn, Inc.
Revere Copper & Brass, Inc. 21
Agency—St. Georges & Keyes, Inc.
Searchlight Section 54, 55
SKF Industries, Inc. 45
Agency—Geare-Marston, Inc.
Sperry Gyroscope Co., Inc. ..... Third Cover
Agency—Charles Dallas Reach Co., Inc.
Standard Oil Co. of Indiana 25
Agency—McCann-Erickson, Inc.
Thompson Products, Inc. ..... Second Cover
Agency—The Griswold Eshleman Co.
War Assets Administration 49
Wolf's Head Oil Refining Co. 38
Agency—The Aitkin-Kynett Co.
Wright Aeronautical Corp. 5
Agency—Charles Dallas Reach Co., Inc.
PROFESSIONAL SERVICES 54

●

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT
Positions Vacant 54
Positions Wanted 54
Selling Opp. Wanted 54

SPECIAL SERVICES
Repairing 54

EDUCATIONAL
Books 54
Schools 54

EQUIPMENT
(Used or Surplus New)
For Sale 54-55

THE SECRET IS
SCINFLEX

Bendix-Scintilla

Electrical Connectors

The Finest Money Can Build or Buy!

Wherever quality is called for, Bendix-Scintilla* Electrical Connectors are the logical choice. These precision-built connectors set a new standard of efficiency with their remarkable simplicity. The secret is Scinflex—a new Bendix-Scintilla-developed dielectric material. It lessens the tendency towards flash-over and creepage, and makes possible efficient performance from −67° F. to +300° F. Dielectric strength is not less than 300 volts per mil. The contacts, made of finest materials, carry maximum currents with the lowest voltage drop known to the industry.

Please write our Sales Dept. for detailed information. *TRADEMARK

• Moisture-proof, Pressure-tight • Radio Quiet • Single-piece Inserts
• Vibration-proof • Minimum Weight • High Arc Resistance
• Easy Assembly and Disassembly

Available in all Standard A-N Contact Configurations.

SCINTILLA MAGNETO DIVISION of
SIDNEY, NEW YORK
Bendix
AVIATION CORPORATION

Meyers' 5-Year Binge

Air Force Secretary Symington in his press conference last week probably made the best defense he could for Hap Arnold's AAF regime which failed to do anything about Gen. Benny Meyers' five year binge. Mr. Symington, however, was confronted with an impossible task.

Delving behind the day-to-day revelations and headlines, a constructive critic naturally is curious to know how and why Meyers escaped punishment for so long. Several stock answers handed out so far sound ridiculous.

The military makes much of the fact that no one in the Army Air Forces knew that Benny was up to anything unusual.

This taxes a lot of people's credulity. Every aviation magazine editor heard insinuations about Meyers irregularities throughout the war. Gossip about Meyers was rampant in the aircraft industry. Rumors were a dime a dozen in Dayton for years and the naive and silly inference made so often that an anonymous letter was the first indication to Air Force top side of any Meyers irregularities is so fantastic to everyone in aviation that we must only wonder once again at the childish way in which Army brass sizes up the citizens' intelligence.

All of that roundelay about whether anyone should take cognizance of anonymous letters is smokescreen as far as charges against Benny Meyers was concerned because too many other people knew he was up to something. That anonymous letter wasn't news to anyone in 1945. Give the Department of Justice credit, however, for asserting that they would have acted on such a letter, and chalk up a mark for Mr. Symington and Gen. Arnold for admitting that the AAF should have. In the case of a lesser known officer an anonymous letter might have been valuable. But anyone who had laid off Benny for so long certainly would never act on an anonymous communication.

The next ridiculous thing Mr. Symington would have us believe is that although Meyers "was living on a scale obviously not supported by an Army officer's salary," Gen. Arnold was compelled to believe Benny's lying answer to a questionnaire on stock holdings. Also, it is contended that Meyers' superior officers were not negligent in failing to observe that his scale of living "was such that he must have other income," and that they could have done nothing if they had (sic) observed it.

Why were they not negligent? Here is the clincher from Mr. Symington's press statement, which is before us: "It is not an American custom to inquire into the personal finances of its officers."

This would have us believe the War Department had no means of investigating any officer unless advance proof appeared miraculously out of the air that he was guilty of defrauding the American taxpayer. This we cannot swallow.

Secretary Symington's statement dispenses some more fog by comparing Meyers to such a notorious swindler as Ivar Kreuger, and by pointing out that conviction of the head of the New York Stock Exchange did not prove all bankers and brokers were crooks.

Mr. Kreuger was not on the public payroll of the United States, while Gen. Meyers was, and therefore Meyers should have been subject to the same legal responsibility and controls that govern any other employee of the federal government. And no one of any intelligence claims that Meyers' record proves all air force officers are bad. Please, Mr. Symington, no more herrings.

Point three which we object to is Mr. Symington's public statement that he is as sure as he is of tomorrow's sunrise that no other general officer of the Air Force is involved in similar activities, past or present. Why? How does he know, if it is still not the American tradition to disbelieve an officer's questionnaire? The same regulations that were effective in Benny Meyers' day are in effect now, and will be until the current proposed changes in procurement are adopted. Any investigation possible now was also possible from 1940 on, when Benny ruled the roost.

Point four: Mr. Symington had an interview with Meyers Oct. 11, and heard enough to convince himself that Meyers' statement should be turned over forthwith to the Justice Department, the Secretary of the Army, and to Sen. Ferguson. But not until Nov. 24 did Mr. Symington call a press conference and announce boldly that although there was a question of legality he was nevertheless stopping Meyers' retirement pay, and stripping off the medals Meyers won while his superior officers let him defraud the people. Why could not Mr. Symington and Gen. Spaatz have taken the same "bold" and "questionably legal" action closer to Oct. 11? The story that they were awaiting the end of the Senate investigation is not very convincing because various other government actions against Meyers are still pending and much more evidence still remains to be divulged about Meyers if several groups so desire.

Point five: The very fact that Gen. Meyers requested a court martial on Oct. 11 is good indication that under notorious peacetime military regulations he had a chance to be saved public exposure in a secret military proceeding, and let off with a pat on the hand. This is damnable evidence. In wartime there is an excuse for secret court martial proceedings. In peacetime the matter is different, and this is another phase of "regulations" Mr. Symington as a conscientious civilian ought to order changed.

Laxness of the Arnold hierarchy of the old Army Air Forces in the Meyers case is astounding. Arnold ignored widespread rumors about Meyers, although the Dayton mess became so bad at one time that the war frauds unit of the Justice Dept. sent William J. O'Dwyer out to clean the place up. The AAF's follow-up cleansing process consisted in wholesale transferring—except Benny Meyers—to points elsewhere. Why did Benny stay?

It is no credit, either, to Gen. Spaatz and the air inspector's office that Sen. Ferguson was hampered in obtaining the famous anonymous letter. It was only after an appeal to civilian Symington that Ferguson obtained it—a few weeks before the hearings opened in November. First attempts were made May 7.

Col. John Price wrote to air inspector Maj. Gen. Junius Jones: "I am reluctant to recommend showing it to the . . . committee in view of the fact that no action was taken by this headquarters. It is, of course, quite possible that this is exactly the information that the . . . committee is checking on; on the other hand, it is possible that they know nothing about this letter and are hitting from some other source." (Editor's Note—Col. Price is being transferred since he wrote his memo. Benny Meyers stayed put for five years).

It is also worth noting that in 1943, when "rumors" of large stock holdings by procurement officers reached a crescendo, the Arnold regime launched "a public relations project" to "squelch" the reports, in the words of Col. William Nuckols, and "counteract" them, in the words of Gen. Stratemeyer.

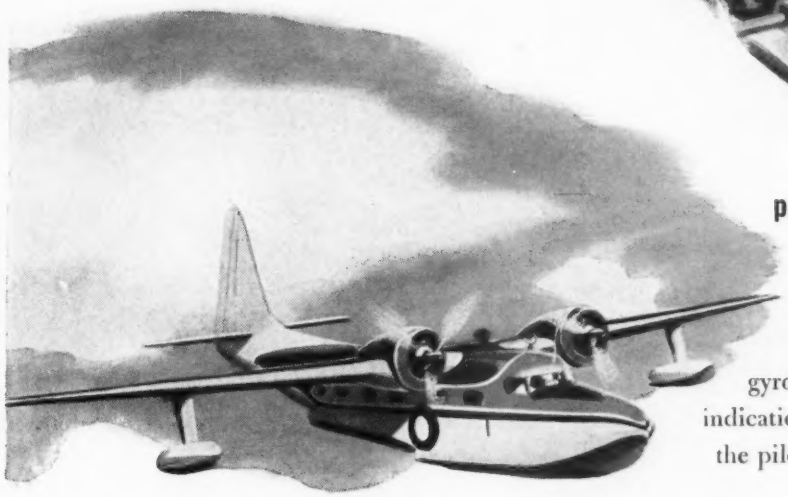
Finally, in 1947, it took a civilian group to uncover what Mr. Symington describes as "one of the most shocking scandals ever exposed in the history of any branch of our government, the sordid story of Bennett E. Meyers." The military clique which permitted that scandal to exist for five years while thousands of American were dying overseas also fought against bringing Meyers to justice.

Fortunately for the new United States Air Force, it is controlled unmistakably and completely by a civilian, and in W. Stuart Symington we have fullest confidence. We hope he cleans up the Air Force and its regulations and makes another Benny Meyers phenomenon impossible.

ROBERT H. WOOD

The Sperry A-12 Gyropilot on executive planes . . .

As the human pilot's automatic "co-pilot" on one-man operated executive aircraft such as the Grumman-Mallard, the Sperry A-12 Gyropilot eases the strain and fatigue of long flights . . . facilitates flying accurately by dead reckoning when busy executives must fly off the regular airways to visit out-of-the-way plants.



provides smoother flight with less pilot effort and greater safety

With the Sperry A-12 Gyropilot and Gyrosyn Compass supplying complete gyro-stabilized control and accurate directional indications under all flight conditions . . . the pilot can do his job better and with less effort than by manual control.

and with greater comfort and relaxation for executives

Passengers land completely relaxed and refreshed from the smooth ride made possible by the A-12 Gyropilot. Its precise automatic control eliminates over-control, "hunting" and "wallowing," holds the aircraft level and comfortable regardless of air turbulence.

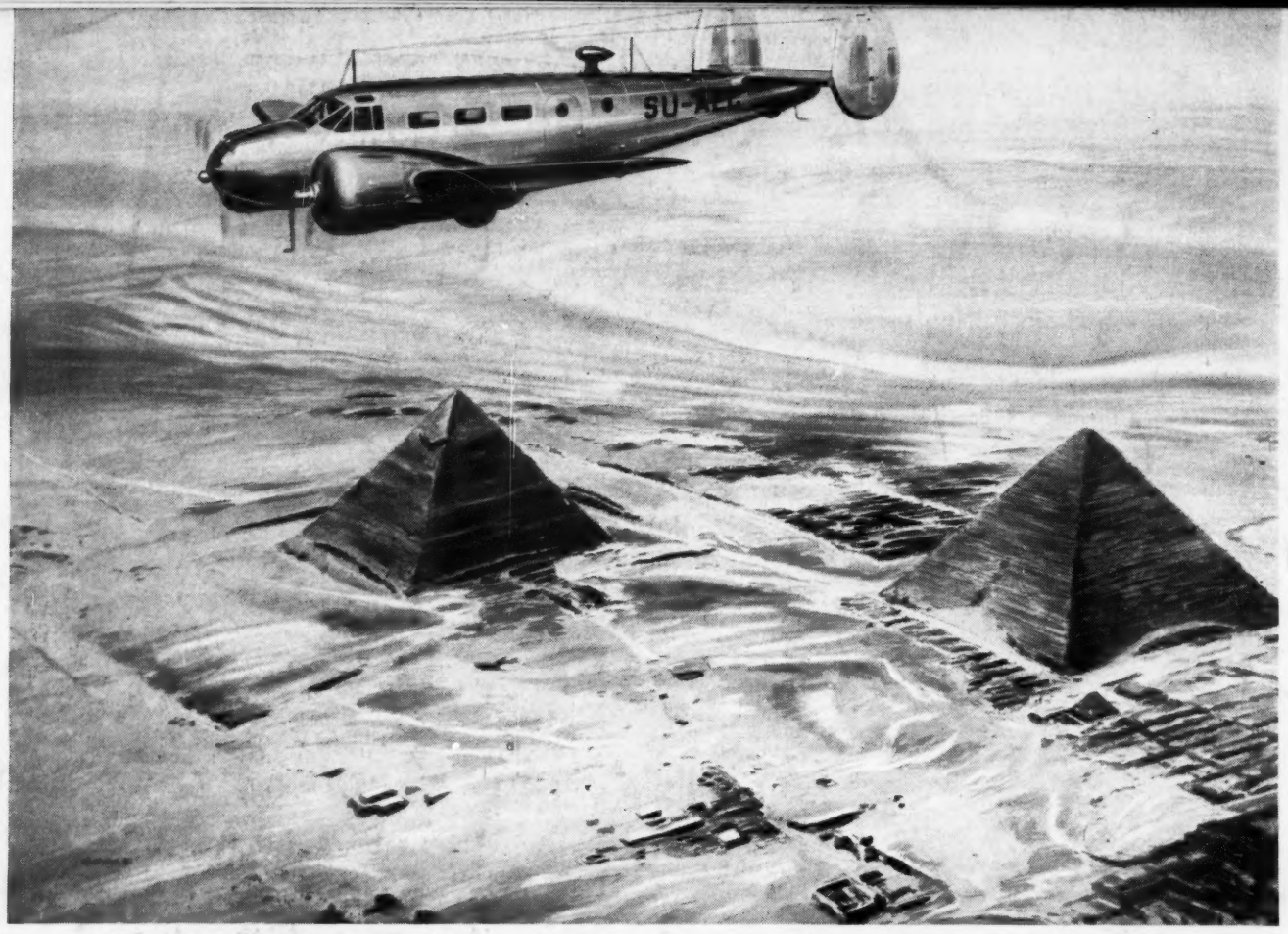
• • •

AND IN THE MARINE FIELD, Sperry Gyro-Pilots, linked with Sperry Gyro-Compasses, are providing automatic straight line steering.

Sperry Gyroscope Company, Inc.

EXECUTIVE OFFICES: GREAT NECK, NEW YORK • DIVISION OF THE SPERRY CORPORATION

NEW YORK · CLEVELAND · NEW ORLEANS · LOS ANGELES · SAN FRANCISCO · SEATTLE



Looking down on 5,000 Years of Commerce

MISR AIRLINES of Egypt operates its fleet of Beechcraft 18's between Cairo, Alexandria, Palestine and Baghdad. Thus, one of the oldest of nations, whose ancient commerce in many respects was comparable to our own, keeps abreast of the demand for fast, efficient modern transportation.

The same Beechcraft equipped for executive use, accommodating up to nine persons—and in luxurious comfort—serves the private transportation needs of hundreds of corporations at home and abroad. To the executive, the Beechcraft Executive Transport means intimate and frequent contact with plants, branches and field organizations—without fatigue, without waste of time. It moves sales and technical personnel quickly and economically. And it often provides the only possible means of securing the quick rest and relaxation imperative to the executive under pressure.

There is a Beechcraft distributor near you with wide experience in company-owned air transportation. Consult him. He can be of valuable assistance in resolving your own transportation problem.

Beechcrafts are the Air Fleet of American Business

Beech Aircraft

CORPORATION WICHITA, KANSAS, U. S. A.